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ABSTRACT

This document contains supporting materials from five case studies illustrating the All Aspects of the Industry (AAI) approach. AAI provides a framework for redesigning programs around broadly conceived, interdisciplinary, industry-focused programs and integrating academic and vocational education. Materials from the Boston (Massachusetts) Public Schools' New Directions Curriculum include the following: health and safety on the job--an overview for vocational teachers; the labor aspect; principles of technology; management; finance; and community economic development. The Oakland (California) Health and Bioscience Academy is represented by the following: incorporating AAI into student worksite learning experiences; school-based health clinic; student projects and AAI; and postsecondary articulation. The following materials are from the Rindge School of Technical Arts, Cambridge, Massachusetts: overview of the school; the 10th grade in 1993: industries and humanities; pathways: the evolution and new plan for 1994 and beyond; and career paths internship programs--program descriptions 1995-1996. From South Division High School, Milwaukee, Wisconsin, are the following: School-to-Work Integrated Studies program objectives; AAI framework; and summer integrated work plans. Materials from the Pennsylvania Youth Apprenticeship Program in Pittsburgh are as follows: history of curriculum development; the AAI project assessment rubric; and the Bridge project portfolios. A section of resources for teaching AAI contains annotated descriptions of the following: 7 organizations offering technical assistance; 6 curricular resources; 12 resources on small business development, entrepreneurship and industry trends; and 34 technical assistance organizations and 48 print and nonprint materials on community, environment, finance, health and safety, labor, management, planning, and principles of technology. Longer descriptions are provided of the following complementary education reform organizations: Coalition of Essential Schools; Center for Collaborative Education; service learning programs; Foxfire; Rural Entrepreneurship through Action Learning (REAL) enterprises; and City/Community-as-School. (SK)

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National Center for Research in
Vocational Education

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AS TEACHERS TELL IT: IMPLEMENTING ALL ASPECTS OF THE INDUSTRY

SUPPORTING MATERIALS

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SUPPORTING MATERIALS

Edited by

Erika Nielsen Andrew

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INTRODUCTION:
CLARIFYING THE CONCEPT:
IDEAS FROM THE BOSTON PUBLIC SCHOOLS

Volume Two of *As Teacher Tell It: Implementing All Aspects of the Industry* is devoted to the supporting materials that were used to create the case studies described in Volume One. In this volume, we provide the reader with more specific examples of how all aspects of the industry (AAI) is operationalized in several schools and institutions. As with the case studies, the materials provided are "works in progress." Most accurately, they chart the teachers' attempts to use AAI over the course of one year. However, because all of the case studies were in the midst of reform at the time of the Joyce Foundation Project, the supporting materials represent the thinking and efforts of several years in most cases. The materials may be adapted to other classrooms, or they may be most helpful and illustrative as one reads the case studies.

The materials in this volume appear by school name in the same order they appeared in Volume One. A table of contents is provided that describes the nature of the supporting materials for each case study. To begin, however, we offer an additional case study—Boston Public Schools. While they were not part of the Joyce Foundation Project, their work on AAI helped our work tremendously. In the summer of 1992, the Boston Public Schools embarked on a major project to revitalize vocational education in the city of Boston. Their aim was to increase the effectiveness of vocational student learning and to shift the emphasis from narrow technical skills to broad problem-solving and higher-order thinking skills. Three goals drove the initiative:

1. To provide students with strong experience in and understanding of all aspects of the industry they were preparing to enter.

2. To integrate vocational and academic teaching and learning.

3. To link Boston's vocational programs with local community economic development efforts.

As a first step in developing curricula to meet these goals, the Boston Revitalization Project convened a group of consultants to provide specific expertise in various aspects of industry. In doing so, Boston reached beyond the usual lists of

curriculum consultants. For instance, a state public health agency staff person worked on health and safety issues; an investment officer from the state's community development finance corporation lent his expertise on finance issues and entrepreneurship; and a university labor studies professor helped to think through how best to teach about labor issues in a high school setting. Rather than generate their own products, the consultants worked as part of a team with vocational and academic teachers from Boston's main vocational education facility. Together, they compiled resources, brainstormed ideas, and created an AAI curriculum guide entitled *New Directions*.

The Boston Public Schools were recently awarded a vocational-academic integration demonstration grant from the U.S. Department of Education because of their continuous efforts to build on this collaborative work and to expand their AAI focus.

To further clarify the meaning of AAI, the Boston Public Schools case study highlights just one section of *New Directions*. It gives an overview of many aspects of industry—health and safety issues, labor issues, principles of technology, management, finance, and community economic development. (Planning, technical and production skills, and environmental issues are not addressed in this section of *New Directions*). While the other case studies in Volume One provide a holistic view of how all aspects is used within a program, the Boston curriculum provides detailed definitions and examples of how each particular aspect can be used across many industries. Excerpts from this curriculum is presented first to illustrate the meaning of AAI. This section is reprinted with the permission of the Boston Public Schools.

New Directions Curriculum
Boston Public Schools

HEALTH AND SAFETY ON THE JOB

An Overview for Vocational Teachers

- "Can the chemicals I work with make me sick?"
- "If I don't notice any symptoms, can I assume the materials I use aren't harming me?"
- "Can any of the chemicals I use affect my ability to have healthy children someday?"
- "If I think a job task is too dangerous, can I refuse to do it?"

These are just some of the questions that students need to know how to answer in order to be prepared, as future workers and employers, to protect their health and safety on the job. Vocational education provides an excellent opportunity to encourage critical thinking and problem solving skills as students learn, at the beginning of their working lives, to exercise their right to a safe and healthful workplace.

There are five essential knowledge areas about the health and safety aspect of work. Students should be able to:

I. identify potential health and safety hazards in a number of different settings;

II. demonstrate an understanding of how health hazards affect the body;

III. demonstrate an understanding of the different options for preventing and/or controlling workplace hazards and the ability to assess the effectiveness of a number of prevention/control strategies;

IV. identify the basic rights of employees and responsibilities of employers under the Occupational Safety and Health Act; and

V. identify at least three sources of information about health and safety hazards on the job and in the environment.

I. WHAT ARE SAFETY AND HEALTH HAZARDS?

Safety hazards are conditions at work that can cause immediate injuries. Examples include fire, explosion and electrical problems, heavy lifting, unguarded machinery, conditions that can cause slips, trips or falls, and motor vehicle problems. Safety hazards can be found in any workplace but are probably most common in the construction trades.

A health hazard is any exposure that can cause harm to the body over time. Health hazards are usually more difficult to identify than safety hazards because both the hazard and the disease it causes may be invisible. Symptoms of occupational disease can occur at any time, on or off the job, and signs of the illness typically take a long time to develop. Health hazards are usually divided into the following categories: chemical hazards, physical hazards, biological hazards, and occupational stress.

Chemical Hazards

Chemicals are used in one way or another, to differing degrees, in almost every occupation or trade taught in vocational classrooms. Although chemicals can cause harm, the extent of the harm the chemical causes depends upon how long the person is exposed to it. A chemical is considered relatively non-*toxic* if it takes a large amount of the chemical to cause damage. When a small amount can be harmful, the chemical is considered *toxic*.

Chemicals can get inside the body in three ways — by breathing them, by swallowing them, and by absorbing them through the skin. Some chemicals are harmful if inhaled but not if you get them on your skin (for example, asbestos). Others can get into your body and cause damage through more than one route (for example, lead fumes or dust is harmful if inhaled or ingested). It is important to know what the harmful routes of exposure to the chemicals you use are.

How much exposure is too much? In general, the more you are exposed to a chemical and the longer you are exposed to it, the greater the effect on your body. But again, if a chemical is very toxic, it may take very little exposure to it to damage your body.

Physical Hazards

Physical hazards are external forces that can affect the body over short or long periods of time. These include overexposure to heat or cold, noise, radiation, and ergonomic stressors.

Ergonomic stressors, very common in many jobs today, include highly repetitive physical movements, forceful movements, and working in awkward positions. Many office workers as well as assemblers in manufacturing facilities do the same tasks over and over with their hands and arms. The use of poorly designed tools that force workers to twist their hands and wrists repeatedly are also problematic. Ergonomic stressors lead to various "cumulative trauma disorders" (CTDs) such as carpal tunnel syndrome. CTDs are currently the most commonly diagnosed occupational disease in the country.

Biological Hazards

Biological hazards refer to the risk of infection or allergic reaction caused by exposure to bacteria, viruses, plants, animals, insects, or spores. Biological hazards are a significant problem in the service industry. Health care providers, child care workers, cosmetologists and others who regularly come in contact with people are at risk. The three infectious diseases of most concern these days in hospitals and other health care settings are AIDS, hepatitis B, and tuberculosis.

Occupational Stress

All jobs are potentially stressful. Sources of stress in the workplace include: too much work, too much responsibility, boring work, underutilization of skills, unclear job expectations, conflicts with super-

visors, co-workers, or customers, and lack of control in the job. Stress can cause physical, behavioral and emotional symptoms including; ulcers, hypertension, alcohol/drug abuse, sleeplessness, headaches, sexual problems, dermatitis, and allergies. Although there are ways to cope with stress, it is always better if the source of the stress is addressed and, when possible, eliminated.

II. HOW DO HEALTH HAZARDS AFFECT THE BODY?

A toxic substance can cause damage at the point where it first contacts the body (the skin, eyes, nose, throat, lungs, etc.) or it can enter the body, travel around in the bloodstream, and cause damage to internal organs (lungs, nervous system, heart, liver, kidneys, reproductive system, etc.) These "systemic effects" are more hidden because you can not immediately see or feel them.

Do all toxic substances cause cancer? No. Cancer, the uncontrolled growth of abnormal cells in the body, is caused by some chemicals but not by others — no matter how much of the substance you are exposed to. Scientists still disagree about whether there is a safe level of exposure to cancer-causing chemicals. Clearly, it is best to assume that there is no safe level.

Some hazardous materials can affect the reproductive systems of men and women, causing miscarriage, infertility, impotence and genetic damage. Some can also affect fetuses in the early stages of pregnancy.

III. WHAT ARE OPTIONS FOR CONTROLLING WORKPLACE HAZARDS?

There are many ways to control hazards once they are identified. Monitoring a worker's exposure to a hazard determines how serious the hazard is. For example, special equipment can be used to determine how much of a chemical is in the air, how loud the noise is, or to what extent workers are at risk for cumulative trauma disorders.

The best method, however, for controlling a chemical hazard is to remove the hazard altogether — either by substituting a safe substance for a hazardous one or by changing the way the work is done so the hazard is eliminated. If this is not possible, the hazardous process should be enclosed (for example, using an enclosed glove box to mix chemicals), isolated (for example, limiting the amount of time people are exposed) or a good ventilation system should be installed. Local exhaust ventilation systems that capture the substance at the point at which it is generated, are better than general ventilation systems which just bring fresh air into the room. Finally, if no other means of controlling or preventing the exposure is possible, personal protective equipment, such as respirators and protective clothing, should be worn (after proper fit-testing and training).

IV. WHAT ARE EMPLOYEE RIGHTS AND EMPLOYER RESPONSIBILITIES FOR PROTECTING WORKER HEALTH AND SAFETY?

The Occupational Safety and Health Administration (OSHA), established in 1970 by the Occupational Health and Safety Act (OSHAct), is the federal agency responsible for making and enforcing laws that protect the health and safety of workers. Under the OSHAct, employers are required to provide all workers "with employment and a place of employment which are free from recognized hazards that are causing or likely to cause death or serious physical harm to [their] employees..." (This is known as the "general duty clause" of the OSHAct.)

Under the OSHAct, workers also have a limited right to refuse hazardous work. The OSHAct does not say specifically that an employee may refuse work... However, it does state that an employee who refuses to perform a task that he/she believes is likely to cause death or serious injury will be protected against subsequent discrimination provided he/she made attempts to get the employer to eliminate the hazard and there was insufficient time to go through normal OSHA enforcement procedures.

Workers also have the right not to be discriminated against for exercising their right to a safe and healthy workplace ("Section 11(c) protection"). Section 11(c) forbids disciplinary action against employees for exercising any right granted under the OSHAct, for example, for forming a health and safety committee or calling in an OSHA inspector.

OSHA's Hazard Communication Standard (otherwise called the federal "Worker Right-To-Know" law) is designed to ensure that workers are informed about chemical hazards in the workplace. It requires all employers to conduct an inventory of the chemical products they use; to collect product information sheets (called Material Safety Data Sheets) from the manufacturers of these products and make them available to employees; to make sure hazardous materials are well labeled; and to inform employees about the chemicals used at the facility and how to protect their health.

V. WHERE TO GO FOR MORE INFORMATION

For specific information about a particular chemical used in the classroom/worksite, first consult the product label and the Material Safety Data Sheet (MSDS). These should provide, at a minimum, the ingredient names. They are also required to provide instructions about how to use and dispose of the product safely, the possible health effects of exposure, what to do in the case of a spill, and other safety information. Unfortunately, MSDSs are frequently inadequate. There are a number of resource materials and agencies that can help, however, including occupational health resource agencies listed in the Health & Safety Resources Section of the Appendix. Written resource materials and relevant videotapes have been assembled by state agencies for your school library that include industry- and occupation-specific information.

Vocational and academic teachers play a critical role in preparing students to become responsible employees and employers who share the mutual goal of health protection in the work place. Learning about health and safety can be integrated well into vocational courses as well as academic courses, particularly science and health. The following section contains suggested activities for teaching the health and safety aspect of work:

VI. LEARNING OBJECTIVES AND SUGGESTED ACTIVITIES

Objective 1. Students can identify potential occupational health and safety hazards in a variety settings.

Suggested Activities:

1. *Health and Safety Overview:* In small groups, students walk around the vocational classrooms in their academy using a checklist to help them identify potential health and safety hazards (checklists to be provided). Students also note whether chemicals are well-labeled. Students report their findings during a class discussion. Survey results are shared with the vocational teachers.

2. *Health and Safety Overview:* While on field trips to real work places, students observe and record the health and safety hazards they see or believe may be present using a checklist as a guide.

3. *Health and Safety Overview:* Students brainstorm definitions of health vs. safety hazards and then generate a list on the board of examples of both types of hazards. They then view a series of slides taken of real work places and identify all the potential health and safety hazards they see (slides to be provided upon request, see Robin Dewey, listed in Health & Safety Resource Section of the Appendix).

4. *Health and Safety Overview:* In small groups, students read several case scenarios involving real work place incidents and identify the possible causes of the injury/death. Through the list of discussion questions, students will be challenged to look beyond the immediate causes and identify underlying reasons why the incident may have happened.

5. *Setting up Ergonomic Workstations:* Using equipment borrowed from a school office or vocational classroom, teacher creates an example of a poorly designed work station (non-adjustable chair with no back support, computer with screen facing the window, document to be typed on the desk at a right (or left) angle to the screen so the worker has to twist to read it, etc.) and asks the students to describe what is wrong with the set-up. Next, adding an adjustable chair to the set-up, teacher asks for one volunteer to sit at the workstation while another adjusts the chair and equipment to make an ergonomically correct workstation, including moving the computer screen to avoid glare. Some measurement is involved. Students judge

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results against a diagram of a well-designed station. Students take turns sitting in the workstation and adjusting it for each other, noting that each time a new person sits at the desk, it needs to be readjusted to meet her/his physical needs.

6. *General Ergonomics:* Students view a videotape on ergonomic hazards in the work place and answer discussion questions.
7. *Lifting and Standing:* Teacher demonstrates proper lifting techniques and guidelines and asks students to practice wrong methods and right methods, noting the difference in strain on the back and shoulders. Teacher also reviews suggestions to ease the strain of standing for long periods of time. Students use footrests and practice exercises to relieve back strain.
8. *Infectious Diseases:* Read an article called *"Watchdogs in the Workplace"* about health care workers and, in small groups, respond to a series of discussion questions. Report back to the class.
9. *Occupational Stress:* In small groups, students review several scenarios involving stressful circumstances in a variety of work and school settings. Students identify the causes of the stress and propose solutions.

Objective 2. Students can identify how health hazards affect the body.

Suggested Activities:

1. Students interview relatives or friends about the kind of work they do/did and whether they or others ever experienced a work-related illness or injury. The family work history is documented and described in a written report. Teacher takes an inventory (and make a graph) of all students with relatives that have had a work-related injury or illness.
2. Teacher invites an occupational health nurse or occupational health educator to address the class about how hazards affect the body.
3. Students view slide-tape shows and videos on selected topics: how hazards affect the body, ergonomic hazards, noise hazards, lead poisoning, and respond to discussion questions.
4. Students interview injured/sick workers to learn about the injury or disease, how it happened, and how it could have been prevented.

5. Each student identifies and researches one common work-related health condition (e.g. carpal tunnel syndrome, asthma, stress, lead poisoning, hepatitis B, etc.) and prepares a written report.

Objective 3. Students can identify at least three sources of information to learn about the potential health hazards identified (including Material Safety Data Sheets, product labels and at least one resource agency).

Suggested Activities:

1. Students contact teachers and/or school officials to request copies of Material Safety Data Sheets (MSDSs) for selected products used in the vocational classrooms of their academy. With a science or health teacher, and using a handout that explains MSDSs, students review and evaluate the information contained in the MSDS. If more information is needed, students contact the manufacturer and/or local resource agencies to request additional information about the product.
2. Students research and evaluate the product labels for several common products used in their academy for their accuracy, amount of information provided, readability, etc.
3. Teacher invites an industrial hygienist to speak to the class about the steps he/she takes to identify workplace hazards (e.g. basic information about air monitoring and controls, etc.)
4. In small groups, students choose a hazardous product used in the academy for further study. Using information learned about the health effects associated with the product from labels, MSDSs and resource agencies, students prepare to teach other students about the health effects of the product and how to use it safely. This can be done through a skit, drawing a warning sign, writing a factsheet, or holding a training session, etc. This information is shared with the vocational teachers.

Objective 4. Students can demonstrate an understanding of the different options for preventing and/or controlling workplace hazards and can assess the effectiveness of a number of different strategies.

Suggested Activities:

1. Teacher invites an industrial hygienist to speak to the class about alternatives for controlling and preventing health hazards in the workplace.

2. In small groups, students walk around each of the vocational classrooms in their academy to identify the steps that have been taken to prevent or control potential health and safety hazards.

3. In small groups, students identify a local company and study its health and safety practices (one company per small group). Groups will investigate the company's size, location, type of business, product(s) manufactured or service(s) performed, and possible hazards. Students compose and type a letter of introduction to a company representative and request an interview. Students prepare a list of questions to ask about health and safety policies and practices and anything else they decide is important to know. Small groups write a report of their findings and present it to the whole class.

4. Each student identifies and researches the range of strategies for controlling or preventing one common work-related health condition (e.g. asbestosis, carpal tunnel syndrome, lead poisoning, asthma, stress, hepatitis B, etc.) and prepares a written report.

Objective 5. Students can identify the basic rights of employees under the Occupational Safety and Health Act.

Suggested Activities:

1. In small groups, students participate in role plays or skits that reenact a worker refusing to do unsafe work and reporting a safety problem and respond to a series of questions.

2. Teacher invites representatives from advocacy organizations and OSHA to present a real case involving OSHA violations and sick or injured workers. If possible, the workers involved would also attend. In preparation for their visit, students read up on the case through newspaper articles and reports and prepare questions to ask the panel members. ◆

THE LABOR ASPECT

According to the Perkins Act, "The labor aspect" of an industry, includes workers' rights and responsibilities, labor unions and labor history, and ways of expanding workers' roles.

The New Directions curriculum defines the labor aspect more broadly. It concerns much more than unions and labor history. This aspect of the curriculum should prepare students for the various problems they will confront in the workplace and should help them understand how to identify those problems, seek remedies and find solutions.

It is important for high school students to learn about the labor aspect of an industry because they may encounter a variety of problems and issues wherever they are employed. Students should know the rights and responsibilities of citizenship, including their rights and responsibilities at work. They should also be prepared to solve personal and group problems at work. Workplace conflicts and discontents are among the leading causes of turnover among workers. Productivity, efficiency and harmony can be enhanced if students learn the skills of problem solving and negotiation. Employers and employees have a stake in creating cooperative work environments in which workers' voices are heard and workers' rights are respected.

Students who enter unionized workplaces should understand what provisions are provided under collective bargaining agreements. They should, for example, have experience in how to use a grievance procedure.

Students who enter non-union workplaces should understand what remedies are available to them in identifying and solving problems at work.

They should know what they can do if they suffer from discrimination or abuse and they should know their rights to take collective action.

Labor studies can facilitate the integration of academic subjects with vocational education across the curriculum. Students can study the history of the various trades taught in the school and can study the history of how workers have solved problems in those trades.

I. Individual Problems and Remedies

Individual workers encounter problems on the job. These problems may involve discipline, dismissal or various forms of discrimination. Workers also face problems as a result of being injured on the job or of becoming unemployed. A knowledge of individual rights and protections which apply to the workplace is important for students who will become workers.

The labor aspect of the curriculum should teach students how to identify problems at work, learn about laws that protect them and seek help in finding remedies under these laws. Students should be familiar with the following kinds of laws as they apply to the individual worker:

- affirmative action
- equal opportunity protection under federal law
- protection of the disabled under federal law
- child labor
- workers' compensation
- health and safety
- unemployment compensation

Local ordinances (like the Boston Jobs Residency Ordinance) and local opportunities (like the joint labor-management apprenticeship programs in the construction industry) should also be studied because they affect job opportunities.

II. GROUP PROBLEMS AND REMEDIES

Workers will also encounter problems at work that affect groups of people. These problems could concern wages, working conditions, health and safety, relations with management, or relationships between employees. Students should learn how to identify these problems as members of a group and how to use teamwork to seek collective solutions.

Students should learn their rights and responsibilities under federal labor law. Some of these rights and responsibilities include:

- the right to a forty hour work week
- the right to unemployment compensation
- the right to a safe and healthy workplace
- the right to equal employment opportunity regardless of race, gender or disability
- the right to notification of a plant closing
- the right to know the content of chemical products used at work
- the right to strike unless a contract or a law prohibits striking
- the right to organize and bargain collectively without penalty
- the right to vote for or against a union in an election
- the right to vote in union elections
- the right to fair representation by a union
- the responsibility of the worker to live up to the terms of employment
- the responsibility of the employer to abide by state and federal labor law

III. RESPONSIBILITY IN THE WORKPLACE

While students at MPTVHS are learning to be effective and responsible workers, they should also learn how to be effective and responsible citizens while they are at work. The problem-solving skills employers seek in the employees of the future should be applied not only to issues of job performance,

but also to issues of justice, security, equity and democracy in the workplace.

In order to gain experience and knowledge in the labor aspect of an industry, students should be able to:

- identify workplace problems and issues
- learn about laws and legal remedies for workplace problems
- practice the skills of negotiation, dispute settlement and problem-solving outlined in the overall learning outcomes of the New Directions curriculum
- learn about labor unions, collective bargaining, and union contract provisions
- study labor history to understand the development of workplace problems and issues as well as the development of labor law and trade unions

The following activities are suggested to meet these learning objectives. Resources recommended for these activities are listed in *A Resource Guide to Labor Education for Social Studies Teachers in the Boston Public Schools.* (See Resource Section.)

IV. Workplace Problems and Issues/Laws and Legal Remedies

Student field trips, interviewing projects, etc., should all include inquiries about working conditions, including wages, hours, health and safety, how labor laws apply, whether a union contract exists (and, if so, how it works), and how grievances and disputes are settled.

Students should also learn about laws and legal remedies for workplace problems and issues. The best way for students to do this is to visit real workplaces relevant to their careers and to talk with workers and managers. They should visit union and non-union workplaces in their field trips and teachers should invite both union and management representatives to school to talk with students. Those teachers in the vocational programs who belong to unions should be encouraged to work with the history teachers to instruct students on the history of the trade and the history of unions in the trade.

Activity 1: *Investigating Health and Safety*

See introduction to Health and Safety Aspect of the curriculum for nine activities for identifying workplace hazards.

Activity 2: *Investigating Child Labor and Child Labor Laws*

Students can study industries that employ large numbers of child laborers today. There are some excellent videos about children in agriculture (contact resource person listed in the Resource Section). They can also study with the history teacher

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the history of industries that employed children and the reasons why child labor laws were enacted at the state and federal level. Students should conduct exercises to learn the provisions of those laws. Students may write papers on the history of child labor and the laws. (See Lesson Topic No. 7, Part II of the *Resource Guide* listed in the Resource Section.)

Using a series of articles on the enforcement of child labor laws in Massachusetts (published in the *Boston Globe*-see resource person listed in Resource Section), discuss the problems faced by young people when child labor laws are not enforced.

Ask teams of students to develop debate positions on child labor. One team will argue for a loosening of child labor laws so that young people can work longer hours and increase their earnings. Another team will argue stricter enforcement of existing child labor laws and for the enactment of new laws to cover unprotected groups.

V. Learning About Labor Unions, Bargaining and Contract Provisions

In all of the academies students should have a chance to visit union work sites and hear from union speakers in classes in order to understand how unions are organized, who belongs to them, how contracts are made through bargaining, and how contract provisions work. In addition, these activities could help students gain experience in the labor aspect in all of the academies.

Activity 1: *How and Why Workers Organize Unions and Bargain with Employers for a Union Contract*

Teachers can use this excellent video "Organizing: The Road to Dignity" (see Lesson topics 1 and 2, Part I of the *Resource Guide* listed in the Resource Section) to show students how a group of African-Americans decide to organize a union, participate in a union election, and bargain with their employer. A teacher Study Guide (also listed in the *Resource Guide* suggests class room activities based on the video and ways to use a union speakers).

Activity 2: *Why Unions Strike*

Teachers can use several exciting videos to teach about strikes (available through resource person and *Resource Guide* listed in the Resrouce Section).

- "Out of Darkness: The Mine Workers' Story" will help students understand the history of the mine workers union and their 1989 strike to defend health and retirement benefits. It contains dramatic editing and moving songs and may hold students attention longer than most labor videos.
- "Glory Days" is a locally produced video about an inter-racial strike of Boston packing house workers and includes important comments by workers from our city on the need for unions and the need for workers of all kinds to work together.
- "Not a Single Step Backward" is another locally produced video explaining why unionized workers at Boston Edison voted to strike in 1986 to gain greater protection for health and safety on the job.

VI. STUDYING LABOR HISTORY

In all of the academies historical and social studies should include reading, writing and discussion about labor history including what problems workers have faced in history and why they have formed unions and taken actions, like strikes, to try to solve their problems. The *Resource Guide* mentioned in the Appendix suggests activities under fourteen topics of labor history. One is highlighted here because of its value for multi cultural education:

Activity 1: *"Cesar Chavez and A. Philip Randolph"*

This activity centers on the careers of a Chicano and an African American labor leader. There are several excellent videos available. And there is a lesson on Chavez and Randolph in the *Resource Guide* listed in the Resource Section. Students may also visit the Randolph statue in the Back Bay MBTA/Amtrack station which includes six historical panels on Boston's African American railroad workers.

Activity 2: *"Mean Things Happening"*

A new resource has become available in 1993. This video, produced for the Public Broadcasting System and WGBH Channel 2, by Blackside, Inc. in Boston focuses on the struggles of black and white workers to unionize during the Great Depression of the 1930's. This is a very high quality video produced by the people who created the award winning "Eyes on the Prize" programs on the history of the civil rights movement. It is perhaps the best single video program avail-

able on unions and why workers have needed them. The video and the curriculum guide are available through the resource person.

VII. PRACTICING NEGOTIATION AND PROBLEM SOLVING SKILLS

In all of the Academies the learning objectives require students to engage in activities that involve negotiation and dispute settlement. These are extremely important skills that are at the center of the labor aspect. They are also generic skills as useful to managers and entrepreneurs as to union and non-union workers.

These activities should include situations that arise from workplace problems. The resource person listed in the Resource Section can provide material for case studies and role plays to enhance problem-solving skills.

After learning how grievance procedures work in union and non-union shops students can do the following activities (the resource person can provide case studies and study guides):

- record and present in writing a worker grievance and advocate a remedy through a grievance procedure;
- prepare a team position on a grievance and develop a strategy for negotiating with a management team over a workplace; and
- have students engage in a negotiating session with a management team over a worker grievance and reach a settlement.

CONCLUSION

In sum, a student should learn the labor aspect of the industry they want to enter for a variety of reasons. Whether they become employers or employees, students need to know what rights and responsibilities workers have in the workplace. Students should understand that in a democratic society certain standards of justice, equity and due process have been developed to govern the workplace. This is essential for good citizenship but it is also important for creating cooperative workplaces which, studies show, are the most productive workplaces with the fewest problems. ◆

PRINCIPLES OF TECHNOLOGY

Computers and VCR's, robots and microwaves, Computer-Aided Design (CAD) software and computer games, two-way interactive television and cellular phones. Technology is changing all around us, in our homes as well as in our work places. The rate of change is accelerating rapidly; the power and reach of new technologies are expanding.

New technologies will affect each and every one of us, and especially our students. Technology will continue to change throughout our lives. It will be used to redefine work in all industries and sectors, new skills will be needed, and old skills will be undervalued and sometimes discarded. Working conditions, job security and career opportunities will be affected.

I. NEW TECHNOLOGY: WHAT IS IT AND WHY IS IT IMPORTANT?

Technology, according to Webster's *New World Dictionary* is "applied science." *The Random House College Dictionary* defines it as "the application of knowledge for practical ends" or "the sum of the ways in which a social group provide themselves with the material objects of their civilization." In other words, it is how a society applies knowledge to the production of the goods and services that it needs or desires.

Technology therefore includes the machines and equipment that we usually think of when we hear the term, but it also means software, materials, techniques and the way work is organized. Technology is where, and in what form, the knowledge about how to do something is put to work doing it.

In order to understand fully an industry and the various roles workers play within it, it is important for students to first understand the technologies that are used in the industry. This means understanding how production takes place, why it happens the way it does, and where decision-making is occurring. These are key knowledge areas in the industry and they are critical to workers as they figure out how to fit into an industry: what works, what does not and how to change things.

Understanding technology is not only a technical issue, not only about machines

and how they work. Students need to see technology and its use as a social as well as a technical phenomenon. For example, while it is important to know how a computer works, it is also important to understand how computers are or could be used and the way that they are changing the relationships among people and peoples' relationship to their work.

In these days of rapid technological change, it is essential to see the computer (or any other piece of technology) as a thing in transition. Computers are pieces of equipment enmeshed in an ongoing process of design, development and implementation based on social choices and they have significant social impacts.

II. STUDENTS IN THE WORK FORCE

Students entering the work force need to understand generic technologies, such as computers, and the processes of technological change as well, because:

1) They will be called upon to work with existing technologies;
2) They will need to adjust to, adapt to, and adopt technologies as they change; and
3) They should be actively involved in political and social discussion about how, and toward what end, technology should be designed, developed, and implemented.

To deal with these ongoing changes, students will have to have self-confidence and a clear sense of how technology works and how it is socially applied. They must believe that they have both the right and the ability to be involved in the changing world of technology. This is true for all students whether they are mapping out a career path; looking for appropriate training; working with a community group trying to use computers; putting together a community development plan; or uniting with fellow workers facing computerization in their workplace.

The ability to identify, analyze, evaluate, and be involved in technological change will be key to individual and social success.

III. KNOWLEDGE AREAS

In each academy, students should learn enough about technology and technological processes to enable them to:

- Define technology to include machinery and equipment, software, materials, techniques, and work organization;
- Describe how changing technology affects jobs, industries, and societies;
- Explain the process of technology design, development, and implementation;
- Explain how workers, government, communities, and managers influence the direction of technological change; and,
- Discuss how changes in technology can affect necessary skills, including who has the skills and how they are acquired.

To understand the underlying principles of technology, students should have knowledge about the different types of technology that are being used or might be used in their industries. These include:

Computers

Although most students will not need to know how to repair a computer, nearly all students will interact with computers and should have a basic sense of their underlying operation. Students should be able to:

- Describe what a computer is and how it operates.
- Be comfortable with basic computer terminology.

Software

Students should know the basic kinds of software and the applications that are relevant to their industry. They should also be able to describe the operation and use of the following types of software:

- Databases
- Word processing
- Spreadsheets
- CAD/CAM (computer assisted design/ manufacturing)
- Desktop publishing

Other Hardware

Students should have a sense of other equipment that is used in their industries and be able to describe and discuss these items, how they are used, and their impact on the work force and the industry. Examples of equipment and machinery include:

- Robots
- Lasers
- CD ROM
- Barcode Scanners
- Fax Machines
- Copiers

Techniques

Many industries are adopting new techniques, that may or may not be connected to new hardware or software. Two examples of these are Statistical Process Control (SPC), which involves gathering, statistically analyzing and graphing data in order to run a production process; and Just-In-Time (JIT), in which parts are made only when they are needed. Students should be able to describe these techniques as they are used in their industry.

Materials

New materials being used in many industries are having a significant impact on the skills needed in the industry and on the number and types of jobs that are available. Students should be able to identify changes in materials technology in their industry and evaluate the impact of the changes. Examples of new materials include plastic pipes in plumbing, composites in construction, and optical fiber in communications.

Work Organization

Students should examine the work organization in their industry and discuss its positive and negative aspects. They should also be prepared to suggest alternative organizational structures and to discuss how these changes might affect their role in the industry. Questions for investigation and discussion include:

- How is work currently organized?
- How has work organization changed in the industry?
- How is work organized in smaller businesses in the community and in larger firms?
- How do technologies like computers or new materials affect the organization of work?

In each of the above areas, students should learn the underlying principles of the technology, be aware of the directions that technology is moving and understand how to keep current as technology changes. They should be able to identify the technologies that are used in their own communities and how they might differ from technologies that are used elsewhere. Students should be prepared to discuss the impact of these changes on training needs, working conditions, career paths, job security, health and safety, etc.

IV. ACTIVITIES

1. Interview older and younger workers in an industry. In a report based on the interviews, describe how the work process has changed, how technological change has played a role and what the impacts of those changes have been.

2. Identify and compare several different firms that provide the same product or service. Look at the technologies that are used. Find out and describe why they are used. Prepare an oral presentation on the different work processes that includes a map or visual showing the production process and an explanation of the principles behind the technologies that are used. Describe how the work force is affected by the different approaches.

3. Brainstorm about what new technologies might be used in their industry in three years, five years, ten years, etc. Explain how these technologies might affect the industry and the firms in the industry.

4. Develop and make an oral presentation on how a computer works for elementary school students. The presentation should cover both hardware and software.

5. Develop and make a presentation on how a computer works for adults who have never used computers. The presentation should cover both hardware and software.

6. Investigate and describe the different uses of computers in their industry.

7. Do a technology audit of their homes. Identify new materials, machines, techniques, software, etc. Describe how these changes in technology have affected their life. Interview members of your family, asking how the technologies have affected their lives. Interview adult family members about technological change in their workplaces.

8. Select a type of technology such as computers or robots or plastics to research and write a history of. Draw a chart that shows the stages that the technology went through.

9. Select a process in the student's industry, such as changing a car's oil and tuning the engine; baking a cake; processing a check; or stuffing envelopes for a mailing. Identify all of the steps that are necessary to complete the process. Students pretend, in groups of five, that they are setting up a shop to do

this process. Think of the different ways that they could organize the work—who does what and when. Develop a plan for organizing the work and present it to the class. Describe why they chose that particular approach.

10. Write a short story about critical needs in the home and/or the community (like more housing, better transportation or increased security) and describe how a technology that exists could be used to meet that need. Be prepared to discuss why the need is not currently being met.

V. INTEGRATION OF ACADEMICS

One of the primary goals of the Boston Revitalization Project is to promote and facilitate the integration of academic and vocational instruction. The following is a list of suggestions for collaboration between work on technology and selected academic subjects.

English
Presentations
Writing
Reading

Science
Materials sciences (chemistry)
Properties of materials
Electronics/Electricity
Engineering
Physics and physical properties
Software programming
Math
Computer logic
Binary systems

History/Social Sciences
Understanding the history of technology
Understanding history through technology
Interviewing
Technology and culture
Anthropology

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MANAGEMENT

I. WHAT IS "*MANAGEMENT*"?

Management, stripped to the bone, simply means coordinating a group of people to get the job done, whatever the job may be. Still, that is a broad concept; in reality, it means tying together most everything else discussed in this chapter — *all aspects of the industry*. To manage, then, is to guide a group of people in putting to use the technical knowledge found in *finance, health and safety, technology* and other areas. A more general and formal definition might be the following:

Management: Planning for and coordinating resources and people in a formal organization or informal group in order to achieve a goal.

In considering this definition, it appears that there *are* concrete, definable, bodies of knowledge — subjects — such as, economics, mathematics, and labor law, which students should explore if they are to learn about "management." Yet, thinking about management only or principally in terms of "subjects" or concrete "knowledge" feels incomplete. The definition above suggests another side to management as well: the phrase, "...coordinating resources and people..." is as much about leadership, teamwork, and communication, that is, about personal and interpersonal skills*, as it is about concrete bodies of knowledge. In the end, management turns out to be as much an art as a science, and learning about management should involve experience in both. The *New Directions* curriculum seeks to provide students opportunities to learn both the art and science of the topic.

II. WHY IS IT IMPORTANT TO LEARN "*MANAGEMENT*"?

"Management" is no longer just for "managers." Shopfloor and "office floor" workers, entry- and mid-level employees of all kinds, in virtually every industry, are more and more frequently being asked to work cooperatively in teams and to assume responsibility for managing their own work. Though these changes have been slow and halting in the economy as a whole, they are becoming widespread enough to have gained a good deal of visibility, and they certainly mark the direction of future trends in man-

* The reader should not be disturbed if what we are describing here as "management" overlaps with other "aspects" or begins to sound in part like a number of the "Learning Outcomes" outlined in the Assessment section. The "all-aspects-of-the-industry" categories established by the language of the Perkins legislation are, after all, not meant to set up rigid and separate disciplines, but rather to be comprehensive and interrelated. Such categories naturally overlap with each other and with any meaningful set of learning outcomes such as the ones presented above in "Assessment."

agement: *Business Week* magazine's cover article of July 19, 1993 observed that, "... corporations and the people who work for them must increasingly cooperate and collaborate to survive...". A 1989 survey of 476 of America's largest corporations found that over 80% have some form of employee involvement processes underway and that, consequently, information and decision-making responsibilities were being given to rank and file employees in factories and offices on a scale previously unknown in American business*. William Brock, a Secretary of Labor under Ronald Reagan, believes that these changes are essential:

> *Too many managers, and frankly too many workers, still think the world is the same as it was 20 years ago. It is fundamentally different. A business in Taiwan can employ the same new tools and technology we employ. Either we compete with them by completely changing the way we work, by improving our people skills and teamwork, or we compete with them on the basis of lower wages.***

If students are to be well-prepared for the workplace of the future, they must have experience working collaboratively in groups and managing themselves and their tasks.

While a large and growing number of companies have begun to shift their organizational and management practices toward team work, even larger numbers, indeed still the great majority of businesses in the U.S., have not made these kinds of changes. Substantial research, including the widely quoted report, *America's Choice: High Skills or Low Wages*, has documented that this is *not* the principal strategy most American companies are choosing in order to meet ever intensifying levels of global competition. The research demonstrates that the strategy of most businesses is to be the "low-cost producer (or service provider)", a strategy that is characterized in many cases simply by trying to pay lower wages than the competition. Students must be prepared for the reality of employment in these "traditional" firms, but they should also have the skills and knowledge to help reverse this trend, to move these companies toward adopting the best work and management reforms and maintaining well-paid jobs. Armed with knowledge of and exposure to new forms of organization and management, graduates will have a more reasonable chance of proposing and implementing these ideas in workplaces where they have not taken hold. Having had genuine experience with such management practices, graduates will also be better able to recognize when an organization is merely "paying lip service" to the ideas, as well as guard against the potential misuse of the concepts to manipulate or deceive employees.

Learning about management is critical for still another reason: leadership opportunities. No matter what kind of employment situation vocational education graduates find themselves in, having management skills will help them advance. Whether their job is in business, labor, government, or community service, having had serious exposure to "management training" will open up opportunities for these graduates to take on leadership roles. They will be better equipped for, and more likely to attain, senior positions in an organization, and as a result assume greater responsibilities and earn a better living.

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* Edward Lawler, Gerald Ledford, and Susan Albers Mohrman: *Employee Involvement in America: A Study of Contemporary Practice*, University of Southern California School of Management, Center for Organizational Effectiveness, 1989.

** William Brock, Secretary of Labor under Ronald Reagan, from "A Conversation with William Brock," *Labor Relations Today*, Bureau of Labor-Management Relations & Cooperative Programs, U.S. Department of Labor, Sept./Oct., 1990, pp. 5-6

III. WHAT ARE KEY AREAS OF KNOWLEDGE FOR "*MANAGEMENT*"?

Management, as we observed before, is as much art as science. As an art, it cannot be learned straight from teachers' lectures or textbooks; it requires a lot of "seeing it and doing it." Learning the art of management takes a great deal of practice working with and coordinating others, combined with ample opportunity for constructive feedback and coaching throughout the experience.

The art of management is clearly of central importance, but the science side of management, the subject matter underlying management, cannot be ignored. In the process of learning about management, students should also be introduced to several key subject areas that serve as a practical foundation for effectively practicing the art. A number of these knowledge areas are listed below:

1. Computation, Measurement and Analysis Tools: A centerpiece of management "science" is measuring performance. The leadership of an organization, any kind of organization — business, labor, non-profit, or government — urgently and constantly needs to know: "how are we doing?" Different kinds of organizations with different priorities and legal structures will naturally have very different criteria for gauging their performance; for some it will be profitability, while for others it will be clients served per day or new members per dollar spent on recruiting. Whatever an organization's mission, understanding and carrying out measurement to evaluate performance is a fundamental part of management.

Measurement tells you "where you are," which is very important. But, equally important, it also helps locate problems, since "where you are" may not be "where you want to be." One role of managers is to figure out what is keeping the organization from "getting there," that is, from performing up to its potential and meeting its goals. Further, measuring performance and identifying and solving problems effectively often requires comparisons: comparisons between projected performance and actual performance, between one time period and another, between one organization and another. The ability to use the tools necessary to make these comparisons is critical. The main tools students need to master are the following:

- fractions, percentages, ratio and proportion
- basic statistics (means, medians, modes, ranges, etc.)
- graphs, charts and diagrams

2. Organizational Types / Legal Structures: Students will find work in many different kinds of organizations whose legal framework and underlying goals vary widely. Understanding "management" means being familiar with the basic characteristics of different types of work organizations, including their purposes and legal structure, ownership and control, advantages and disadvantages:

- public vs. private
- private:
  a) for-profit
     > privately held (sole proprietorship vs. partnership vs. corporation)
     > publicly traded
     > conventional ownership vs. empoyee ownership vs. cooperative ownership
  b) not-for-profit

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3. Organizational Dynamics, Leadership, Power and Authority: Many of these aspects of "management" are difficult to teach in a classroom, but they are still important for students to examine, especially since they are also among the most trying issues with which managers and employees have to contend. It is also essential for understanding these ideas that each student have opportunities to experience leadership roles. Topics the students might cover include:

- bureaucracy
- group dynamics
- communication
- leadership and decision-making styles
- compensation
- labor relations and unions
- labor and employment law
- hierarchy, power and authority, their roots, uses and misuses.

4. Economics Fundamentals: Principles of economics are considered to be among the basic building blocks of "management," though they focus mainly on the private sector. Still, familiarity with these principles serves an employee well in any employment situation. If a student does not work in the private, for-profit sector, her or his organization is certain to have relationships with private businesses and be affected by events in the private sector generally. Learning the fundamentals of economics also helps a manager understand the broader environment in which her or his organization operates. A number of basic principles of economics to introduce could be the ones listed below. *New Directions* staff, and others who may not be familiar with these terms, should refer to the exercise called *Defining Terms* described later in this section. They can be found in introductory management or economics textbooks or encyclopedias of social sciences.

- microeconomics:
  - > opportunity cost
  - > supply & demand
  - > profit motive
  - > externalities
- macroeconomics:
  - > inflation and unemployment
  - > the business cycle
  - > poverty, wealth, and income distribution
  - > taxes, regulation, and the role of government
  - > the global economy and international competition
  - > economic systems: the debate — planning vs. the free market

5. Economic History: Expertise in management includes a "practical" sense of history. If students understand how industries have evolved over the last 100 years or more, they will gain practical insights into how business and employment conditions and opportunities change — and how the changes might affect them and their communities. This practical sense of history will give them an indication of what is possible in the present in terms of finding a job, starting a business, or building a labor organization, and how circumstances could differ in a year or a decade or a generation. Here students might consider the following:

- the evolution of industry and employment in the United States from agriculture to manufacturing to services and its underlying causes
- the Industrial Revolution/Industrialization, Taylorism and scientific management

- the Great Depression and World War II to the present, the destruction and resurrection of Germany and Japan, rapid technological and economic change
- the current composition of industry and employment and growth/decline trends;

6. **Basic Business Planning:** Familiarity with the basic components of a business plan is essential to learning management, even for students who are not likely to work in the private sector. These categories of information are important with respect to management in any organizational context, public, not-for-profit, or private: a) product/service, operations, facilities, b) market analysis: industry demand trends, competition, c) marketing & sales, pricing, advertising, potential customers, d) ownership, organization, labor relations, compensation, e) finance. (See the "Finance" and "Entrepreneurship" sections.)

IV. "*MANAGEMENT*" AND ACADEMIC-VOCATIONAL INTEGRATION

Any task, in any discipline, that requires students to work in a group; to set goals, measure performance, and solve problems as a group, and to be responsible for their work as a group, teaches the fundamentals of the art of management. Learning this dimension of management will be even further enhanced if tasks require that students rotate in and out of leadership positions in the group. Whether the course is "African-American Literature" or "Cell Biology", if students work in and lead groups in the manner just described, they will make substantial progress in learning management.

The science of management, that is, the knowledge content side, also offers ready material for integration, and below are several suggestions for teachers. Academic subjects have been grouped as Humanities/Social Studies and Math/Science.

1. Humanities/Social Studies:

a) *Biographies:*

Biographies of well-known industrialists/entrepreneurs (John H. Johnson, Andrew Carnegie, Liz Clairborne), labor union leaders (A. Philip Randolph, Cesar Chavez, Eugene Debbs), and civic/political reformers (Jane Addams, Malcolm X, Roberto Hernandez) raise numerous business and management concepts. Aside from traditional discussion and writing assgnments, students could develop skits, based on information from a biography, that address issues related to business, management, power, the economy and related topics. (See "Management Aspect" Resources)

b) *Literature:*

Novels or plays such as Ann Petry's *The Street*, James Baldwin's *Native Son*, Lorraine Hansberry's *A Raisin in the Sun*, Ellease Sutherland's *Let the Lion Eat Straw*, George Orwell's *1984* and *Animal Farm*, and any number of others are replete with material for discussion and other activities that examine issues of economics, management, bureaucracy, urban life and legitimate/illegitimate power. If, for example, "power" is the topic under discussion, questions that might be asked include: Who has power and who does not in this situation? How is power being exercised? What makes that person or organization powerful? Is the use of power in this situation "legitimate"? Why or why not? Have you ever experienced power being exercised this way? When and how? What did you do? How could a person respond under such circumstances?

c) *Current Events & Mass Media:*

Local newspapers, journals and television raise issues of management, economics and the use and abuse of power every day. Teachers could begin by looking at the neighborhood and local arena, and as time passes, include national or international issues as well. They could cut articles or obtain tapes of news broadcasts or documentaries that treat these topics and design exercises around them. Individual students or teams could be assigned to cut articles of their choice or watch the evening news on a given day and offer their own interpretations or suggest their own questions for the class to review. Research could be integrated into exercises: students could be assigned to retrieve from a library or other pertinent organization articles about particular events (e.g. General Motors plant shutdown in Framingham, the resignation of An Wang from Wang computers, the Eastern Airlines strike at Logan Airport, etc.) and report on them. Current events and the mass media offer many opportunities to address management topics.

d) *History:*

Studying historical periods or phenomena such as the Industrial Revolution and Industrialization prepares the terrain for understanding and working in the contemporary business context.

e) *Defining Terms:*

Students could be assigned various related tasks: 1) defining management terms (bureaucracy, externality, legitimate/

illegitmate authority, hierarchy, etc.) by using an introductory economics or management text; 2) writing the terms in sentences; and, 3) describing personal experiences with them.

2. Math/Science

a) *Calculation and measurement:*

Fractions, percentages, ratios, graphs, charts are so central to management that they must be mastered if teaching *all aspects* is to be successful. This requirement creates a natural opportunity for integration. Teachers of the new, project-based courses and academic math teachers should collborate to teach "management math" to be used in student projects. For sample problems, see the National Foundation for Teaching Entrepreneurship (NFTE) curriculum, Chapters 7, 8, 9, 11, 12, 23, 24. and others. For other resources on how percentages, fractions, ratios and other kinds of math are used in management see the "Management Aspect" section of *Resources.*

b) *The Scientific Method / Controlled Experiments:*

Workers and managers often use a technique to gather information about and analyze a thorny question. The classic procedure — the "Scientific Method" — was developed by Enlightenment scientists as they began testing their theories about how the world works.
Scientists identified a phenomenon of particular interest to them and called it the "dependent variable." Certain other conditions, called "independent variables," were carefully and sytematically varied, while all other conditions were held constant. Scientists could then see if and how the independent variables affected the dependent variable. Varying only certain conditions and holding everything else constant, was a way to begin to identify true causes and relationships. This method is now used widely in business as well. Science teachers and project-based teachers could integrate their work by teaching and using the scientific method. Teachers and/or students could identify classroom, academy, or campus problems (dependent variables) and devise controlled experiments to collect data, analyze problems, and propose solutions.

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V. SUGGESTIONS FOR ACTIVITIES

1) *In a Manager's Shoes / Journal Writing:*

Students need to take a "live", personal look at managers and their jobs. They need to find out who managers are, what they really do during a typical day or week, what knowledge and tools they use in their work, and what education and employment paths they followed to become managers. Students could begin this process (individually or in pairs) by choosing several organizations in their industry or related field of interest (labor, non-profit, or public) and researching, by letter and by phone, who the managers are. (Students could start this process "close to home" by working with managers in the school.) After introducing themselves and beginning to establish a relationship, they could request job titles and descriptions, reporting relationships and organizational charts from managers in these organizations. Students could review the information with teachers and make oral and written presentations about it. They could make journal entries covering certain aspects of their interviews and their own reactions. Did managers seem to like their jobs? Why or why not? What specifically did they like or dislike the most? What seemed most interesting to the student? What has changed most for the manager(s) since he/she started the job?

Students could develop a closer relationship with one or more managers/leaders of these organizations through ongoing written and phone communication, perhaps culminating in one or more meetings, or partial days to "shadow" the manager. Students should also speak to non-managers to find out their views of managers and managerial work to ensure they gain a full and balanced perspective. Students could maintain files of material for different managers and different companies that include a record of phone calls, letters, company material, and interviews for their portfolios.

2) *Investment / Consumption Game:*

To help teach relevant "management arithmetic (percentages, fractions, ratios) and management skills at the same time, students could play the following game. The game has two parts. Part 1 is investment. The teacher brings in materials for use as currency (marbles, paper clips, board game money, pennies, etc.) and distributes it equally to student teams. Each team must devise an imaginary product or service to sell to the rest of the teams, think of and write up an investor recruitment

strategy (what the product/service is and why it will sell), and then advertise its product/service to the other teams, the potential investors. Teams decide how to "invest" their currency to seek the highest return, i.e., which other teams' products/services will be the most successful. Investment takes place through an exchange of currency for stock certificates. Part 2 is "consumption." Student teams set a price for their product/service. The teacher then distributes more currency to student teams (or individuals). Each team spends its currency on its choice of other teams' products. Total Investment and Total Sales are tallied for each team and students calculate the return on sales, return on investment, sales per employee, investment per employee, and other measures for all the teams. Product/Service ideas and descriptions, "investor recruitment strategies", and other work could become student portfolio material.

3) *Case Studies / Role Plays:*

One to two page case studies depicting typical management and organizational dilemmas could be used with student teams. All team members are assigned roles and the dilemma is acted out by a few students in front of the class. Students "stay in role" and enact a discussion of the case, first within their teams and then in a larger group of the assembled teams. Work relations concepts (e.g. "Rights & Responsibilities") could be introduced and used to organize the discussions about the case study. Sample cases and facilitator guides are available (see Ownership Associates, Cambridge, MA, in the "Management Aspect" Resources Section.)

4) *Simulations, Exercises, Games:*

Innumerable teamwork and management training exercises are available from organizational consulting and training companies. Chosen and facilitated carefully, they can help reinforce teamwork while also demonstrating important management concepts and common problems — communication, decision making, leadership, group dynamics, etc. — in an active and stimulating way. Again, see the "Management Aspect" section, *Resources*, for more information. Students could also begin to invent their own exercises and later facilitate them as well.

5) *A Local Development Project:*

Student teams could investigate a sizable local development project, either one in progress (the Division of Motor Vehicles)

or one in the planning stage (the Roxbury Mall). They could choose or be assigned roles, such as the *The BRA, The Developer,* or *The Carpenters Union,* to provide a particular focus to their investigations. Negotiations or discussions among the "parties" could be enacted in class. Research results on the project — blueprints, architectural drawings, financial statements, interview transcripts — could also be placed in portfolios.

6) *The Supply & Demand Game:*

Have students identify a very popular item and a very unpopular item, e.g., concert tickets to currently fashionable and unfashionable music groups. The teacher manipulates imaginary supply of and demand for these items and "auctions" them off to the class, demonstrating the relationship between supply, demand, and price. Students observe through their own bidding activity that when supply is low and demand is high, prices rise and vice versa.

CONCLUSION

The world of work is changing at a dizzying pace. Intense competition in products and services reaches into every sector of the economy — even the public and non-profit sectors are not immune. If students are to be prepared for this world, if they are to take on leadership roles in it, if they are to be effective advocates for the work reforms it needs, then understanding management is an essential element of their education. ◆

FINANCE

Finance provides a unique perspective on a task, project, event, or situation. It can be defined as the art of assessing, reporting, and manipulating value. Finance is not a neatly packaged "thing." It is what we do analytically as we look at the world around us. It encompasses many different but overlapping fields of technical knowledge as well as the social sciences. As a broad field, it concerns large multinational corporations as much as your checkbook.

WHY IS FINANCE IMPORTANT FOR MADISON PARK STUDENTS?

A knowledge of finance is a valuable tool in determining how to allocate resources. It helps evaluate a course of action, or can be used to spot and solve problems in a that might otherwise be misinterpreted or inappropriately handled. For students in the various academies, a solid grounding in the principles of finance is especially crucial for several reasons:

- First, finance is no longer a field reserved for specially trained, so-called "white collar" professionals. As modern technology has grown more affordable and accessible, the skills needed to master these technologies and maximize their usefulness have put new educational demands on the broader population. Today, for example, a computer and all-in-one desktop accounting package costs approximately $1,200. Small business people can easily automate their payables and receivables (with up-to-the minute reports), manage their inventory, produce mailing labels and form letters, reconcile multiple checkbooks, and even have the computer prompt them to pay their bills on time. This is extremely valuable.

Fortunately, the skills required to gain full access to today's technology are straightforward. A teacher can easily incorporate them in regular activities, particularly when the learning is project-based and/or takes place in the context of a school-based enterprise.

A special note to the reader: Please see the selected chapters from the National Foundation for Teaching Entrepreneurship (NFTE) curriculum listed in the Entrepreneurship section of this guide.

- The various concepts and disciplines of finance also create a common language that is remarkably consistent from one setting to the next. Common stock is common stock and cash is cash no matter what industry or academy is concerned. As students develop an ability to see the world through "financial eyes" they also develop an ability to communicate with one another in an entirely new way.
- Lastly, business leaders pay particular attention to the financial ramifications of their decisions. Understanding finance helps young job seekers anticipate a prospective employer's priorities. It also helps them differentiate job opportunities in a growing industries from those that might lead to professional "dead ends" in weak industries.

In general, a knowledge of finance takes the mystery out of the "system." For young students, the benefits of this de-mystification are a higher comfort level with the system's institutions and infrastructure, and a much clearer understanding of their community's relative needs, as well as their own economic responsibilities in meeting those needs.

WHAT ARE THE KEY ELEMENTS OF FINANCE?

Proficiency in finance requires mastery of basic academic skills such as mathematics and English. It also requires learning the seven "aspect-specific" concepts and disciplines outlined below. Additional helpful sources are also listed in the Resources Section.

Money

Money is a medium for the exchange of value. There are many different money systems in the world (U.S. Dollars ($), British Pounds Sterling (£), Japanese Yen (¥), German Deutsch Marks (DM), etc). However, the basics always hold true. If Party A deals in commodities (where one small unit of a product is indistinguishable from the next), the easiest way to trade with Party B, who manufactures capital goods (major single-unit products) is if they use a medium that stores or represents the value of their respective products. For example, if Jim sells eggs and Sally builds houses in a world with no money, just imagine the difficult scenario where Jim wants to barter for a house or Sally for one egg; a truckload of eggs is about as useful to one person as is a single roof shingle to the other! Money is important because it is an easily divisible, non-perishable way to hold value. It facilitates commerce.

Importantly, the focus of instruction must not be so much on the money but the underlying value. Exchanging money without exchanging value necessarily means a transaction is unequal. Students must be encouraged to explore why they think some things are "valuable" as opposed to other things and why their classmates' "value structures" often prove to be markedly different. Simply put, what is worth a great deal to one person may be worthless to another. A single, heated room holds inestimable value for a homeless person, while the same space has little value, if not different meaning, for a personal living in a luxury condominium. Lessons on value are also an excellent place to explore the financial ramifications of differing cultural value structures (a classic example — "...why spend more on prisons when the money can be spent on schools?")

Key Concepts: Value, equipment valuation techniques, property appraisals, assessments, auctions, relative value, money

systems (fictitious, international, domestic), foreign exchange.

Accounting

A technique for tracking and reporting value. Accounting is literally a way of "accounting" for what has happened in a business, on a job site, or even in personal affairs. Accounting is known as "the language of business." There are many different branches of accounting. There is managerial accounting, cost accounting, tax accounting, government accounting, and so on.

The simplest approach to take is the financial accounting approach. Financial accounting is what bankers, financiers, and managers use most frequently. It is based on *using* financial statements and reports, rather than on *producing* them. As a result, financial accounting is more "big-picture"-oriented and becomes a good decision-making tool for analysts and entrepreneurs.

All accounting is based on the formula Assets = Liabilities + Equity (i.e., what an organization or individual has of value = the total claims on those things by creditors and owners). With some simple theory, this can be expanded to what are known as "T" Accounts, which provide a way of tracking the value in each of these categories through a special recording system known as debits and credits. This provides a direct entree to the issues of how capital is moved within or between companies.

Transactions give rise to the need to track the movement of value. For example, if Mustafa sells baseball cards to Juan on credit he can rightly boast of a sale (and show it on his books), but takes in no cash, except at the term of the credit (hopefully). Is Mustafa really happy with this? Is Juan a good risk? Perhaps Mustafa would be happier selling on C.O.D. terms and generating enough cash to pay his own vendors. The point here is that accounting can be broken down into plain talk so as to expose the underlying issues of capital control such as cash flow, risk, debt, and equity (ownership).

Key Concepts: The accounting equation (A=L+E), journals, ledgers, the accounting cycle and bookkeeping skills, financial accounting, "T" accounts, understanding and working with the basic financial statements (balance sheet, income statement, cash flow, capital structure, debt, equity, financial projections, craft-specific accounting and bookkeeping skills).

Micro-Economics

The theories of small economies. Economics is concerned with the ways in which resources are allocated among alternative uses to satisfy human needs and wants. These take the form of manufactured items, services, goods, and sometimes circumstances that people desire (e.g., a middle-class lifestyle). In this way, economics helps us to understand the nature and organization of our society. All students must know the basics of economics in order to make effective career decisions and function as responsible citizens. It is a crucial part of becoming financially competent.

Economics is divided into two parts. Micro-economics is the study of small economies. It deals with the economic behavior of individual entities such as consumers, firms and those who control resources. These theories are very applicable to community-based activities. Community economic development, a knowledge area required under the Perkins Act, utilizes micro-economic principles in determining advantageous

economic development strategies to fulfill communities' unmet needs. Entrepreneurship, another knowledge area required under Perkins also relies heavily on an understanding of micro-economics. Some commonly discussed micro-economic concepts include:

- *Supply and demand*, from which the pricing of goods and services is derived. Supply and demand effect a wide range of local issues from the cost of a deeded parking place to the price of gasoline on one corner (where there is only one filling station) and the next (where there are three, perhaps).
- *Opportunity cost*, the worth of an alternative that must be sacrificed when one that is more highly valued is chosen. Students might weigh, "what is the opportunity cost of being only an average academic achiever?" for example. Can this be measured in forfeited salary or quality of life?
- *Production analysis*. What is the cost per unit in a production run of 10 pipe fittings as opposed to a run of 10,000? Why is there a difference? What is the effective cost of a small publisher's latest edition if she only sells one third of her inventory? At what point does the incremental effect of a production improvement yield little or no difference? How does a "just-in-time" production schedule change the carrying costs of work-in-process inventory?
- *Economic cycles*, such as identifying the path of a dollar through a local business community. Where are community residents spending their money? Do they spend it among each other? Do they earn it from each other? Are there "leakage" points? Or, is it a non-cycle because all the money is earned outside the community and spent outside the community?

Key Concepts: Supply and demand (pricing), marginal value, opportunity cost, production analysis, economies of scale, diminishing returns, economic cycles (ie: identifying the path of a dollar through a community and how many times capital turns over within a community), (re-)investment.

The Business Cycle

The theories of large economies (macro-economics). The second division of economics is macro-economics, which focuses on the economy as a whole or highly aggregated markets, such as the market for labor or consumer products. These theories are essential to understanding the economic and political environment in which all businesses must operate.

In general, business people talk about macro-economic trends in terms of the business cycle. Historically speaking, a business cycle lasts approximately seven years. It can be tracked by following changes in the country's gross national product (the sum total of all the goods and services produced by our nation) over time. As GNP grows the economy experiences an expansion. It eventually plateaus and begins to decline. If GNP is declining it means that we are producing less and less. Since it takes fewer people to produce less, unemployment increases and the economy "cools off." This is known as a recession. Eventually, GNP ceases to decline and "things start to pick up again." The point between GNP's lowest ebb and the plateau of the last expansion is called an economic recovery; the economy returns to where it last peaked. Any growth beyond that point constitutes a new expansion, and the cycle starts again.

Of course, today the business cycle is not that tidy. Lingering unemployment, new technological dynamics in the work force, the national debt, and other factors contribute to a complex economic situation. Economists are calling into question the traditional notions for how interest rates effect the money supply and, therefore, the economy, for example. Others fear that inflation, the rate at which consumer prices increase, lurks ominously in the background of our economic future. To be adept in a financial discussion means understanding these macro-economic essentials, which are basic survival tools for young people entering today's work force.

Key Concepts: The business cycle, inflation and the consumer price index, the money supply, gross national product, interest rates, unemployment, the national debt.

Capital Markets

The markets in which value, money, and derivatives of money are traded. The best known of these markets are the stock and bond markets. However, billions of dollars of value changes hands in the commodities markets, the markets for options and futures, and in money and currency markets as well.

The capital markets usually forecast changes in the business cycle. However, the markets also *respond* to domestic and international current events, depending upon how "investor confidence" is swayed. For example, if you held stock in a company that announced weak profits, you might try to sell it and buy something else. However, you probably would not be alone, so the price of that share would undoubtedly drop (supply vs. demand). Even someone who missed the company's dismal announcement would know something was awry if the stock price dropped suddenly. Knowing the capital markets allows an individual to "read between the lines" of the press, public and private sector spokespeople.

Key Concepts: The stock markets (international, national and local), the bond and credit markets, the money and foreign exchange markets, the commodities markets, mutual funds and investing, the concept of options and other derivatives, the Securities and Exchange Commission.

Business Law

The societal structure(s) for establishing and enforcing working relationships between companies and between individuals. Every one of the concepts and disciplines outlined above (money, accounting, capital markets) manifests itself on paper. Most of that paper is either legal in its nature or gives rise to agreements that are governed by law. In other cases, the regulations and policies governing them are crafted into legislation. The study of finance is not possible without an understanding of basic legal concepts.

Business law can be studied from two angles; that of the business owner (entrepreneur), or that of the consumer (industrial or household). In a classroom simulation, it would be fun to have both sides represented. Business owners would be most concerned with the structure of their business, maximizing their legal options, and limiting their liability to the public, which sometimes includes their employees. Consumers are interested in the bodies of law that are most often applied to them, sometimes without their prior knowledge (ie: banking laws and regulations concerning consumer finance).

Key Concepts: Contracts, torts, forms of businesses, constitutional law and the rights of citizens, banking law and the legal

obligations created under various financial documents, regulations pertinent to the capital markets and maintenance of their integrity, laws governing money, bankruptcy/foreclosure and collections, collateral and secured transactions, trust transactions, estates.

Banking & Financial Institutions

The organizations that are most active in the aspect-specific areas outlined above. This broad category includes credit unions, banks, finance companies, insurance companies, brokerage houses and investment banks, and the US Government. Personal and corporate finance alike are governed by these entities. Knowing how they work is not only important to a full knowledge of finance, but it is also critical for success in any arena.

Key Concepts: The US Federal Reserve System, the US Treasury System, the Internal Revenue System and the Massachusetts Department of Revenue, deregulation of financial services, the banking system and reform, financial services products and how they work, organization of various financial services companies, financial planing for small businesses and individuals, community economic development.

SUGGESTED ACTIVITIES:

The following activities are arranged in the order of the seven elements of finance discussed above.

Money

1. Have money counting exercises with real money in different foreign currencies. Students could set up a cash box and simulate sales. Speed and accuracy would be measured in much the same way as in the current Banking Program. Students could then practice exchanging one currency for another.
2. Have students create a money system within the academy complete with coinage and bills. Students would have to design currency and decide its value.
3. Have students negotiate a barter arrangement for raw goods with another academy, or arrange for payment in exchange for goods or services. Students would choose the medium of exchange and figure out the equivalent worth of one for the other.

Accounting

1. Develop a simple budget for a group project or for a department within the school. Students would keep track of all expenses and income against the prepared budget. A final accounting presentation could be made to the class.

2. Develop a budget and prepare a mock financial report of a fictitious business in the community. Have small groups of students each select a component of the business to use as the subject of the financial planning and evaluating.

3. Introduce students to balance sheets. Have them develop an income and expense budget for a business.

Micro-Economics

1. Survey a neighborhood in a nearby community to test the economic assumptions behind a local "economic dilemma." This could be unemployment in the surrounding community, lack of representation of minority contractors on major construction sites in the surrounding community, lack of incubator spaces to accommodate young entrepreneurs and start-up businesses in Roxbury/Dorchester, land utilization and renovation of existing structures, and the like. Devise a plan to address the issues and propose it to a local official.

2. Identify an economic strength within the community. Justify the argument using a micro-economic analysis. Suggest ways that any of the academies can reinforce this strength.

Business Cycle

1. Have students find a recent quote from the President of the United States or the Chairman of the Federal Reserve that involves one of the economic principles or indicators discussed in class, such as inflation, unemployment, etc. Interview professionals in your industry with respect to their feelings about the quote. Relate their feelings to at least two other economic principles or indicators discussed in class.

2. Write a campaign speech based on the things you have learned in your profession that would make you a better economic leader than the mayor, governor or president. There will be a competition for the best speech writing team.

Capital Markets

1. Chart the stock performance of three companies that make products you might use in your industry. Try to find financial and newspaper data that explains the stock performance. Would you buy the stock?

2. If you had $1,000,000 in your industry or for your school via the capital markets, how would you invest it? Make a plan and present it to the class?

Business Law

1. Write an agreement among a team of business partners for a new venture. Decide 1) what you want out the relationship, 2) what the group's goals are, and 3) what are the parameters for working together — for example, who is in charge, who receives the profits, who is liable for non-performance?
2. Research a local regulation or ordinance and how businesses in the area comply with its restrictions. What is the history of this regulation? Why does it exist Is it good? Should it change?

Banking and Financial Institutions

1. Go to your bank of choice and get a loan application. Fill it in. Use fictitious information if necessary (you can pretend to be J.D. Rockefeller if you want), but the application must be properly executed.
2. Make a proposal to a local business for an equity investment in the company. Find out how much capital is needed, what it will be used for, and where you might find such money. Your team will be responsible for writing a formal proposal.
3. High school curriculum might include lessons on the banking system and reform, financial services products and how they work, organization of various financial services companies, financial planning for small businesses and individuals, community economic development.

COMMUNITY ECONOMIC DEVELOPMENT

Community economic development (CED) is a process that enables communities to determine their own destiny. It is different from traditional development in its methods, mission, and focus because it adds a fifth factor to the four traditional elements of economic development: land, labor, capital, and entrepreneurship. The fifth factor is power. Traditional economic development seeks to expand the employment base, taxable property, or other sources of income of a community or region, typically through recruiting or subsidizing private firms, building roads and other infrastructure, or seeking federal assistance. Although CED also seeks to increase a community's income, the community's people are its special focus, and its mission is to provide all of them with an equal chance to participate in and benefit from economic activity.*

Furthermore, CED poses different questions from traditional development models. It focuses not just on how many jobs are created, but the quality and stability of such jobs, and who gets them. It looks beyond the amount of available space or the number of banks, to the location of such resources and whom they serve. It takes into consideration the number of firms attracted from other states, but looks even closer at the number of businesses started by local residents. Simply stated, CED is concerned with who gets what, and how this is decided.

Traditional economic development was the business of company presidents, chambers of commerce, and government agencies. CED expands the field to include new actors: minority entrepreneurs, working people, churches, cooperatives, and community-based organizations, for example. These new participants also employ new tools such as community assessment, organizing, community and worker ownership, land trusts,** and conversion of defense facilities and technologies to civilian uses, to name a few.

* Andrew Reamer, "State and Local Development Policy: Copycat or Custom Fit?" The Entrepreneurial Economy, Vol. 3, No. 11, may, 1985. p. 7.

**Land trusts reserve land for social and community use as designated by the trust agreement. This strategy is often used for affordable housing and other purposes which yield a community benefit.

The Context for Community Economic Development

CED has evolved in the context of a changing domestic and international economy. Many Americans have seen their economic position deteriorate in recent years. This is especially true in the manufacturing sector, which has shifted many of its well-paying jobs to lower wage areas in other regions or overseas. As a result, many young Americans no longer expect to live more prosperously than their parents. A high level of unemployment has become the norm. Inequality has deepened among income groups, races, men and women, regions of the US, and occupational groups. In some cases, government policies concerning taxation, defense, and economic development have further worsened these conditions and disrupted many communities as well as the lives of community residents.

In this context, some residents determined that it was not enough to block the bulldozers of urban renewal, highway construction, and institutional expansion. For example, employees, local activists, religious institutions, and other community representatives came together in efforts to halt or otherwise respond to plant closures. Two movements emerged from this type of collaboration: 1) community organizing, to advocate for more jobs, better goods and services, public access to decision making, more equitable housing and banking practices, and other forms of economic justice; and, 2) community development efforts, to develop programs and policies that focus on CED, such as local business development, finance, technical assistance, job training, moderate-income housing, minority outreach, community development corporations (CDC's), and new forms of ownership and participation.

Why is it Important to Learn "Community Economic Development"?

The "community" in "Community Economic Development" encompasses the population, its diverse needs and talents, and the groups and institutions that bind it together. This explains why CED, as opposed to traditional economic development, is fundamentally concerned with the community context of economic activity — it moves beyond a focus on individual jobs, enterprises or development projects and extends broadly to the people, institutions, and practices that determine the ways in which economic decisions are made and how economic wealth is distributed. CED examines how the community might effect an enterprise, as well as how an enterprise or its industry might effect the community. However, for CED to have a long-lasting impact, it must be practiced by a diverse spectrum of local residents and workers, who have acquired a firm grasp of community issues, needs and structure, and economic issues. Moreover, these individuals must understand both the local business issues and the broader industrial issues.

Young people, such as students at MPTVHS, who understand this perspective will understand development better and be able to contribute to it through their school-based projects and ultimately through their employment or entrepreneurial choices. The federal legislation known as the Perkins Act also supports CED by directing student attention to participatory forms of work organization, including worker ownership, which have parallels in community-controlled means of economic development. By examining community development corporations, land trusts, consumer cooperatives, and similar models, students gain further knowledge of how participatory economics function, and

how workplace and community-based enterprises can support and reinforce one another.

Although knowledge of such opportunities is helpful for students, the objective of this curriculum is not to prepare every vocational education student for a career in community economic development. Rather, this curriculum fosters a more holistic view of work — how jobs are created, who benefits, who decides — and introduces some of the skills of CED (e.g., planning, management, finance, analysis, and organizing) that are most transferable to other work settings. Students using this curriculum will become acquainted with the data and methods used in CED and gain a critical appreciation of the "real-world" limits and constraints placed on them. They will also make connections between the quality and availability of work and the vitality of their communities.

Summary

Students who study CED should: 1) understand traditional and revised concepts of the local economy, how it operates, and its outcomes for the community; 2) develop research, analytical and interpersonal skills for assessing community needs; and 3) develop and evaluate CED strategies and program initiatives.

Areas of Knowledge

CED requires planning skills. It requires knowledge of how to define problems and assess needs, and craft responsive strategies and long-term plans. Students need to know the traditional planning and decision-making processes in local government, as well as community-based and other alternative means for planning and realization of economic goals. They must learn about the management methods employed by private and non-profit enterprises, where economic wealth is actually created. Since financing, and the various public and private institutions that provide it, is as critical to community economic development as it is to any other investment arena, students of CED should also acquire an understanding of finance and accounting methods, sources of capital, and capital markets.

To develop these skills and knowledge, students can draw on tools from urban planning and design, business management and finance, and community organizing. Concrete exercises and projects presented in the second part of this section offer examples of how to foster direct exposure to these skills and knowledge areas.

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Specific Skills and Understandings:

1. Knowledge of CED:
   - The basic terms, concepts, and history of CED and community organizing.
   - Understanding how CED responds to gaps in the local economy, and how it overlaps and differs with traditional economic development.
   - Key vocabulary: people, land, enterprise, development, income, wealth, entrepreneurship, ownership, control, power, quality of jobs, etc.
2. Understanding the institutions governing CED and their roles:
   - Private employers, banks, utilities, developers, landowners, government agencies.
   - Community-based groups (advocates, development corporations), social service agencies, churches, unions, worker-owned businesses.
   - The role of such institutions in one's community and the key actors in a major development project as represented in newspaper stories and other published sources.
   - Economic decision-making power, which includes more players and institutions then private firms and is not always evenly distributed.
3. Collecting primary and secondary data, and interpreting and analyzing these and other indicators of community need:
   - Locating and analyzing US Census, state, and local sources of data on demographic and economic trends (population size, age distribution, racial and cultural composition, labor-force participation, unemployment rates, occupations, education, income and poverty levels, access to income, education, jobs, etc. by race, neighborhood, gender, etc.); types of jobs available; understanding the limits of such data sources.
   - Identifying and interviewing key informants about community strengths and needs; testing and strengthening hypotheses developed from initial data collection.
   - Analyzing type and mix of goods and/or services available and upkeep of storefronts and pedestrian areas through street-level observation.

4. Collecting primary and secondary data, and interpreting and analyzing the flow of wealth in the community:
   - Identifying patterns of business and land utilization, ownership and research (City Assessor, other sources); determining levels of homeownership vs. absentee ownership; local vs. outside business ownership; location and lending patterns of banks; large branch plants vs. "homegrown" businesses; usage of energy and other natural resources.
5. Developing strategies to improve the flow and control of wealth:
   - Identifying venture opportunities to develop land or new businesses; expand or retain existing businesses; convert firms to worker or community ownership; increase hiring of local residents; support local entrepreneurs through finance and technical support, and other strategies by developing and assessing business plans; identifying unmet needs and setting priorities; participating in decision-making, writing, financial analysis, and negotiation.
6. Involving the community in planning and development activities:
   - Developing focus groups and organizing community meetings and other participatory forums to assess needs, set priorities, and determine strategy; organizing skills; negotiating to articulate and resolve conflict.

ACADEMIC-VOCATIONAL INTEGRATION AND POTENTIAL PROJECTS

If there is a core CED concept that teachers of all aspects must integrate across disciplines, it is that work is not divorced from life and the places where people live. This means teachers must help students build critical and aesthetic awareness of their neighborhood and the larger community. Students must have an economic awareness of how communities are shaped by business, and how local economies are shaped by residents and the people governing them. To help students obtain this kind of understanding teachers must touch on the study of economics, geography, civics, sociology, biography, history, and other fields that demand research, analytical, and creative skills. Only then can students begin to take active steps to shape their community's economic life through planning and organizing. CED projects and exercises can help students develop problem-solving, team work, presentation, and persuasion skills that are necessary for them to be good employees and to create vibrant neighborhoods.

Community Economic Development (CED) and Integration

CED concepts and exercises could be integrated into academic subjects in the following ways:

Social Studies

Reading and discussion:

Assign excerpts from urban studies classics, such as:

>Jacobs, *Death and Life of American Cities*

>Goodman and Goodman, *Communitas*

>Gans, *The Urban Villagers*

>W.F. Whyte, *Street Corner Society*

>Lebow, *Talley's Corner.*

Concepts and issues:

>What is a neighborhood?

>What is a community?

>What makes communities succeed or fail?

>How are cities and neighborhoods important to economic life?

>How do economic changes affect a community?

Newspaper exercises:

a) Ask students to obtain and read a range of community newspapers representing both city neighborhoods and ethnic groups and suburban places (e.g. *Bay State Banner, Jamaica Plain Gazette, Dorchester Community News*, New York's *Amsterdam News*, Somerville, Watertown, Framingham weeklies).

Concepts and issues:

>What can be learned about a community from its newspaper?

> What are the key issues and concerns, particularly regarding the economy?

b) Select one or more community economic topic for student groups (e.g. Parcel 18, the Megaplex stadium proposal for South Bay) and track them in the *Globe, Herald* and other local papers. Ask groups to compose letters to the editor on these topics.

Panel discussion

Invite representatives from different facets of community development (e.g. an activist, an elected official, a banker, a small business owner from the neighborhood) to participate in a panel discussion. Each panel member could speak briefly on his or her own definition of CED. Ask students to write letters of invitation and to formulate questions for panelists in advance. Concepts and issues:

- Clarifying differing views of development
- Identifying decision-makers and institutions which govern community economics

Mathematics, Science, and Technology

- Quantitative skills:

  Data pertinent to the population and economics of the community can be adopted to teach techniques of quantitative measurement and interpretation. Descriptive statistics from the US Census concerning population size, family incomes, unemployment, and other community data can be used when teaching about ratios, percentages, percent change over time, averages and medians and similar measurements. Encourage the critical use and interpretation of charts and graphical data from newspaper articles describing community issues.

  Concepts and skills:

  >Quantitative measurement

  >Interpretation of charts and other graphical data

- Finance and budgeting:

  The teaching of mathematics for accounting and financial calculations could draw examples from community development projects. Community-based organizations could provide business plans, loan statements, and real estate pro forma statements drawn from recent projects undertaken in Boston neighborhoods.

  Concepts and skills:

  >Use of financial calculators

  >Time value of money (interest, present value, discounting)

  >Internal rate of return

  >Investment choices, etc.

Software

The above cases of community development finance could be incorporated in the teaching of computer spreadsheet programs, such as Lotus 123 or Microsoft Excel. Presentation and interpretation of graphic data could also be linked to the teaching of graphics software. Database-management packages could also be used here.

Concepts and skills:

>Basic math skills

>Financial calculations

>Computer skills

Humanities

Writing:

a) Students write poetry, short fiction, "raps," plays or other expressions describing their neighborhood or community, and their experiences working or looking for work.

b) Students write to a "pen pal" in another city or state. Encourage them to explore what the pen pal's community is like, the types of jobs and industries available, and the questions about their own community they would want to answer for their pen pals.

Literature and music:

Use poems, stories, novels, plays, songs, raps or other literature with a specifically urban community theme or setting. Discuss the artist's vision of community or sense of "place." Where relevant, examine the role of work and economic life in the art. Ask students to compare these visions with their own perspectives of community and work, described above. Discuss the role of arts in the life of the community; how arts are financed, how arts organizations acquire and develop it for community arts projects.

Suggestions for Projects and Activities

Interviewing:

a) Students interview relatives, neighbors, and other adults about the community's economic history, and submit reports, enhanced by audio or video recording if possible.

Questions for discussion:

>When did the family settle in Boston, and why?

>What kind of work did immigrating members seek here?

>What kind of work did family members perform in the community they left behind?

>Did industrial changes, such as factory closings or job layoffs, influence decisions to move?

b) Have students formulate questions for mayoral candidates regarding their views or plans on community economic development. Submit them in writing to the candidates.

Observation:

Ask students to attend a meeting of a city or community-based agency concerned with an economic development decision (e.g. rezoning a parcel of land, siting housing or services, developing a new business). Have them report on their observations.

Mapping and design:

Students draw a picture or "map" of their street and surrounding neighborhood, identifying landmarks of personal importance. This urban-design exercise helps to clarify how a person perceives her/his own community. Develop further maps by asking students to locate sites and land uses important in community development: residential and commercial areas, parks, daycare centers, and other social services, vacant lots, industry, etc. Identify a large vacant or under-used site in the community. Employing drawing, modeling, photography, and other tools, ask students to envision and design new uses for the site.

Community profile:

Groups of students are asked to profile their neighborhood, using Census and other data sources to describe its demographic, social, and economic character and make judgments about local conditions and needs. List as many businesses in the neighborhood as possible. Discuss the types of jobs available. List the number and location of banks in the community. Compare services available (e.g. fire, police, health care, sanitation) with other Boston neighborhoods or with suburban communities.

Case studies:

Groups of students select a community development organization or project and develop a case study of decision-making and proect management. Interview directors or project leaders regarding the goals and outcomes of their projects, whey they chose them, and what they might do differently in the future. Augment reports with role-playing, photography, tape or video recording, or other media.

Business development:

Building on community profiles and the case study experience, student work groups focus on an unfulfilled need or "niche" for a good or service in their community. Develop market research, business plans and, where practical, prototype products.

Oakland Health and Bioscience Academy

Incorporating AAI into
Student Worksite Learning Experiences

SAMPLES from Suggested Workplace Learning Journal Assignments

- PROBLEM SOLVING
  Describe a problem at your worksite. How did you solve it, how do you plan to solve it, or how would you solve it (if you had the power to do so)?

- THREE BEST THINGS ABOUT MY INTERNSHIP
  What three things do you like best about your job? What does your list say about you, your values, your interests, etc.?

- IDEAL/PERFECT DAY AT WORK
  Describe your ideal day at work. What would make a perfect day at your worksite?

- THE CHANGING WORKPLACE
  Talk with your coworkers. Find someone who has worked there a long time. What changes have taken place? What changes do you, your coworkers, or your supervisor foresee in the future? What do you think your worksite will be like ten years from now?

- EFFECTIVE TEAM
  What is an effective team? Is there a sense among your coworkers that they are a team? Why or why not? What is needed at any worksite to build a good team? What are the essential ingredients/key elements for a team to work well together? In what ways do you personally feel part of the team at your worksite? Are there any ways in which you still feel like an outsider? If so, how? What can you personally do to becoming an important part of your worksite team?

- CONFLICT RESOLUTION
  Have you noticed any conflicts at your worksite? How are conflicts resolved? How does your supervisor handle conflicts? How do coworkers handle conflicts? What differences do you notice between the ways in which conflicts are handled at the worksite and the ways in which you have seen conflicts handled in school or elsewhere?

- PERSONAL GROWTH

  How are you changing because of your internship? What are you learning about health careers, health care delivery systems, and about yourself? How are your goals, your views of the health care industry, and you yourself different because of your internship/apprenticeship?

- PHOTO ESSAY OF YOUR WORKSITE

  Using a Polaroid camera (or another camera if you prefer) and obtaining permission from your supervisor and/or department head, take at least 20 pictures at your worksite and then arrange them either on a poster, in a notebook, or in/on your own idea for a display. Write captions for your pictures or design your photo essay in such a way that you take us on a tour of your worksite. Put emphasis on showing us the role your department/worksite plays in the total health care delivery system.

- RECRUITMENT BROCHURE

  Imagine you were hired to recruit people to work in your particular department/ office/lab. Design an advertising campaign which highlights the best things about the jobs available in your department. Obtain quotes from individuals who work in the department and/or your supervisor about what they like best about working in that particular department. Brainstorm all the plusses of working there. Make your department sound like a fantastic place to work. Look at sample ads. Make yours even more creative, more enticing, etc. You may use a simple ad format, a brochure, or your own creative mode to advertise/recruit potential workers to your chosen department.

- IMAGINE A PATIENT

  Create an imaginary patient who either visits or is in some way impacted by your department. Imagine he/she visits, calls, or writes (as appropriate) your department and describe either what exactly happens during the visit as a patient or how your department helps her/him resolve a particular issue or meet a particular need. Be creative. Make up a fantastic name, a challenging medical condition or issue to deal with or solve, an interesting scenario, etc. Include dialogue and strong descriptive writing if appropriate.

- MEDICAL ETHICS

  Think of one or more possible medical ethics situations which might come up in this particular department. Write about both the possible medical ethical situation(s) which might come up and your reactions/thoughts on the ethical issue(s) involved.

- OCCUPATIONAL HEALTH HAZARDS/WORKPLACE HEALTH AND SAFETY

  Assess your worksite for both possible health hazards and/or how the workplace design includes special health and safety procedures and/or design solutions. (Review information/fact sheet on possible occupational health/ workplace environment hazards.)

- WORKPLACE MATH

  Keep a log of all the possible uses of MATH you notice at your worksite. Ask one or more workers/supervisors how he/she/they use math in their job? How do these uses of mathematics relate to what you learned/are learning in school? Write your reactions. What did you learn about the use of math in this particular worksite? Did anything surprise you?

- EDUCATION/TRAINING PLAN

  If you were in charge of designing an education and training plan for someone who would eventually work in your department, what would it include? What courses should he/she take to best prepare him/her to work in this department? What other specialized training should he/she have? What specifically must he/she know and be able to do to work in this department? Are there any special experiences he/she should have to help prepare them for the jobs involved?

- IMAGINE THE FUTURE

  Imagine it's TEN YEARS FROM NOW and you have been working in this particular department for two years. What exactly is your job description? What do you know or what are you able to do that you don't know/can't do now? What do you like best about your job? Write a day in your life ten years from now. Include your feelings, reactions, thoughts, etc.

- INTERVIEW WORKERS

  Interview employees and supervisors in your department about either or both the advice they would give to someone planning to work in this field and the general advice they would give to young people about working and about life in general. Write up the advice/knowledge you discover (á la *All I Really Needed to Know I Learned in Kindergarten*).

Oakland Health & Bioscience Academy
Health Career Explorations
Kaiser Permanente Regional/Central Offices
All Aspects of the Health Industry

Name: _____

Date: _____

Regional/Central Office Department Visited: _____

One of the primary goals of your Health & Bioscience Academy experience is that you gain strong experience in and real understanding of all aspects of the health care industry. One of your personal goals during your career orientation/job shadowing experiences at the Kaiser Permanente Regional/Central Offices is to "put together as many pieces of the all aspects of the health care industry picture" as you can. Use your job shadowing to increase your *understanding of* and *experience in* the following aspects of health care: Planning; Management; Finance; Technical & Production Skills; Underlying Principles of Technology; Labor Issues; Ethics; Community Issues; & Health, Safety & Environmental Issues.

If there is time during your job shadowing experience, see if you can be a superb health industry detective/journalist and take notes on as many of the health industry aspects as possible. Write both about what you observe and about what you learn through department presentations, etc. Ask questions of your job shadowing host(s) which will help you explore all aspects of health care. Become especially aware of *how* the particular department you visit is part of the larger Kaiser Permanente structure (i.e., the role the department plays in Kaiser's operations) and how the mission of, the role of, or the work the department does is related to quality care for Kaiser Permanente patients.

PLANNING:

plan (n, v) a scheme of action or procedure; a design or scheme of arrangement. PLAN refers to any method of thinking out acts and purposes beforehand.

How are department goals and objectives determined? Does everyone in the department participate in setting goals and objectives for the department? How does the department participate in the overall planning and setting of goals and objectives for Kaiser Permanente as a whole? How does the department plan activities to meet goals and objectives? What role does research play in your planning? How does your department acquire relevant information and determine its accuracy? What types of assessments are done? (assessment: appraisals, evaluations; acts of estimating or judging value, needs, etc.) How does your department form its planning group or groups? Describe how your department planning process works. Does your department plan alone or do you work with other departments. What does your final department plan look like? Do you make use of time lines, flow charts, or other graphic representations in planning for your department? (flow charts or flow sheets: detailed diagrams or charts of operations and equipment through which material passes, as in a process; a graphic representation, of a sequence of operations in the department and/or of activities planned to reach specific goals and objectives.)

What role does Kaiser Permanente's overall mission of providing quality patient care play in the planning done in this department?

MANAGEMENT:

management (n) the act or manner of managing, handing, direction or control; executive skill/ability; the person or persons controlling and directing the affairs of a department, institution, business, etc.; regulation; administration

What is the management structure in this particular department? How does this fit in with the overall management structure for Kaiser? How are decisions made? To what extent does everyone in the department participate in decisionmaking? How are responsibilities delegated (or divided up)? How are resources (time, money, material, facility resources, human resources) allocated? How are individual performances assessed? How is the department as a whole assessed? How is feedback regarding management provided? How do you determine department and/or Kaiser Permanente-wide overall needs such as training, research, capital development, or resource development needs? What training is provided to managers and/or workers in this department? What training is provided for working with a culturally diverse workforce and community?

FINANCE:

finance (n, v) the management of revenues; the conduct or transaction of money matters generally; the pecuniary resources of a company, organization, government, or individual; to manage financially; to conduct financial operations; manage finances

How are financial decisions made in this department? How within Kaiser is it determined how much money is allocated to this department? How are budgets prepared and how are they used? How does Kaiser and/or this department make cost and revenue forecasts? What sort of accounting is done and/or what detailed records are kept to track budget performance? How does the department make decisions on how to forecast its budget or on how to spend its budget? Are the salaries for employees in this department part of your department budget and/or part of the overall Kaiser Permanente budget? How are salaries determined?

How does financing work within Kaiser. How is the overall budget for Kaiser Permanente determined? Is the budget for each department separate? Is the budget for the Regional and/or Central Office separate from the budget for the Medical Center? Besides the fact that patients and/or companies pay for health care services, how else does Kaiser and/or this department gain revenue(s)? Since Kaiser Permanente is planning a brand new medical facility, how will money to pay for this expansion be raised? Does Kaiser Permanente make other investments? Can people buy stock in Kaiser Permanente? Does Kaiser Permanente ever take out loans and/or grant loans?

UNDERLYING PRINCIPLES OF TECHNOLOGY:

principle (n) an accepted or professed rule of action or conduct; a fundamental, primary, or general law or truth from which others are derived; the rules or methods of application in action/working rules for general use

technology (n) the branch of knowledge that deals with industrial arts, applied science, engineering, etc. (related to science and industry; production methods, processes, etc.)

What role does technology play in this department or in Kaiser Permanente as a whole? How is computer technology used? Are the computers in the department part of a computer network or does each employee have her/his own stand alone computer? What specifically are computers used for (i.e., word processing, recordkeeping, databases, designing graphics, etc.) in this department? What is e-mail and how is it used? What software is used in this department? What "rules" or principles govern the use of computers in the department?

What other forms of technology are used in this department? What other types of equipment are used? (audiovisual, etc.) For what purposes are these other technologies used?

Confidentiality is an important concern in health care. Given the use of sophisticated technology, how can patient confidentiality still be assured?

How is technology in the department changing? In what ways has technology made the work the department does easier? What challenges and/or difficulties does technology provide? Are people working in the department more isolated because of technology or are social relationships within the department improved by the technology employed?

How has the technology used in the department changed in the last ten years? What changes in technology for the department are foreseen in the next ten years?

TECHNICAL & PRODUCTION SKILLS:

Technical (adj) belonging or pertaining to an art, applied science, manufacturing process, engineering, or the like; peculiar to or characteristic of a particular art, science, profession, or trade

Production (n, adj) Having to do with the act of producing, creating, manufacturing

What technical skills are needed in this department? How are they acquired? Do employees need special technical training before working in this department or is on-the-job technical training provided?

Are there any special "products" produced by this department? If so, what sort of specific products does the department produce? Are there special procedures performed in this department? If so, what are they? What production skills are needed in this department (example: ability to design graphics on the computer, desktop publishing, etc.)? How are they acquired? Do employees need special production skill training before working in this department or is on-the-job production skill training provided?

As a student in the Health & Bioscience Academy at Oakland Technical High School, what technical and/or production skills can you be acquiring now that would best prepare you for a job in this department?

LABOR ISSUES:

labor (n, v) productive activity, especially for the sake of economic gain; the body of persons engaged in such productive activity, especially those working for wages; to perform labor; to work; to toil; to strive toward a goal

Most of the employees at the Kaiser Permanente Medical Center belong to labor unions. Is this also true at the Regional and Central Offices? If so, what sort of labor unions are involved? Does each Kaiser Permanente employee sign an employment contract? What are some of the key elements of an employee's contract? What are some of the employees' responsibilities and roles and how are they determined? What are some of the employees' rights and how are they assured? What methods are used to expand employees' roles in decision making? What methods are used to improve communication between department managers and department employees? How are conflicts between a manager and an employee resolved? How are conflicts between one employee and another employee resolved? What procedures does Kaiser Permanente use to encourage job satisfaction by employees? How are labor issues different at Kaiser Permanente than they were in the past? How will labor issues be different at Kaiser Permanente in the future?

ETHICAL ISSUES:

Ethic (n) the body of moral principles or values governing or distinctive of a particular culture or group; a complex of moral precepts held or rules of conduct followed by an individual or group

Ethical (adj) pertaining to or dealing with morals or the principles of morality; pertaining to right and wrong in conduct; in accordance with the rules or standards for right conduct or practice, especially the standards of a profession

(syn: moral, upright, honest, righteous, virtuous, honorable)

Ethical issues are particularly important in the practice of medicine and throughout the health care industry. What role do ethical issues play in the department you are visiting? (With what specific ethical issues might the particular department you are visiting ever be involved?) Are Kaiser Permanente employees ever inserviced on ethical issues in the health care industry? Is there an ethical code of conduct in place in the department or in Kaiser Permanente as a whole? How are standards for what is "right" conduct and what is "wrong" conduct determined? How is "doing the right thing" encouraged at Kaiser Permanente? If someone in the department thought that someone else was doing something very unethical at work, how might this be handled?

COMMUNITY ISSUES:

What are the positive impacts of Kaiser Permanente and/or the particular department you visit at the larger Oakland/East Bay community? Are there any negative impacts of Kaiser Permanente and/or the particular department you visit on the larger Oakland/East Bay community? How are positive and negative impacts on the community determined? In what ways is this particular department involved with larger community issues? Besides patient care, are any other services or products provided to the community by this department? If so, cite some examples.

What community resources does Kaiser Permanente use? (What raw materials? Labor? etc.) What community services/products/resources does Kaiser Permanente provide?

In terms of industrial processes in which Kaiser Permanente is engaged, how are negative effects on the community and the environment minimized?

Who are Kaiser Permanente clients? What are their main reasons for choosing Kaiser Permanente as their medical provider? How do Kaiser Permanente clients pay for Kaiser services (medical insurance, etc.)?

How does Kaiser work with the community to identify problems and needs and to develop proposals for addressing problems and needs?

HEALTH, SAFETY, AND ENVIRONMENTAL ISSUES:

What are the health and safety risks or potential problems involved in working in this particular department and/or the health care industry (include not just the dangers associated with various procedures or machines, but the short-term and long-term effects of exposure to and contact with the materials used)? Are there any occupationally associated health concerns (i.e., health risks associated with computers, hazardous substances used in the performance of department work, etc.)?

What specific safety plans and/or rules are used in this particular department? Does the department or the larger organization have a health and safety committee? Where is health and/or safety information posted in the department (e.g., Are safe practices in using equipment and handling materials posted? Are employees provided safety training or inservicing?)?

Are emergency procedures written down? Does the department or the larger organization ever have emergency drills (e.g., the way schools have fire or earthquake drills)?

What should the employee do if he/she sees a hazard in the workplace? To whom do they report any work related injuries? What are some of the engineer or administrative controls of workplace hazards (e.g., enclosures, ventilation, material handling systems, appropriately designed furniture, job rotation, rest periods/breaks, written work procedures, labeling, safe handling instructions)? Is any personal protective equipment (respirators, lab coats, goggles, gloves, ear plugs, etc.) used in the department?

Does the department and/or Kaiser Permanente as a whole have an Environmental Impact plan (i.e., does the department try to reduce the short- and long-term effects of their products and services on the environment, as well as the effects of waste produced by the industry, including throw-away packaging)? What are some of the environmentally appropriate methods used to dispose of or deal with industrial waste and byproducts? Are any dangerous wastes or products produced by the department and/or the health care industry handled?

Do you notice any possible workplace hazards? Look carefully at all the machines, tools, aisles, and work processes. Examples: Air quality; machine safety guards, maintenance, etc.; equipment (maintenance, safety guards, load requirements, etc.); substances (any hazardous materials? training to read safety labels? training in procedures for safe handling, storage, disposal of hazardous materials?); floors (clutter, slippery, access to exits, etc.); wiring; noise and vibration; lighting; radiation; temperature; excessive sitting or standing; and job atmosphere (over-supervised, required to work too quickly, monotonous, discrimination, promotion of positive social relationships, etc.).

School-Based Health Clinic

SIM CLINIC . . . Healthworks:

A Practical Experience in Exploring All Aspects of Planning and Implementing a School-Based Health Clinic and Health Education & Resource Center

Imagine a future that is unlike the past . . . Envision the kind of clinic and Health Education & Resource Center you want to create . . . Use your knowledge, skills, and access to resources to help make it a reality . . . Develop a vision; scan the environment; assess enabling and inhibiting forces; determine outcomes; build strategies and activities; gain support; and implement, monitor, correct, fine tune, and continue ongoing development and ongoing community involvement. Make it happen!

To Do

Imagine that you (and your team mates if you choose to work as part of a team) have been hired to serve as planners for a school-based (or community-based) Health Clinic and Health Education & Resource Center. Your salary (i.e., grade/evaluation/ assessment) is tied to the quality of work you do and the number of tasks you are successfully able to complete. You should complete a *minimum of 14* of the following Sim Clinic tasks. The following *four* tasks are required of all teams:

Alpha Beta, Pi, Sigma

You must also complete *ten* additional tasks of your own choice. It you are working as a team, you should choose to do additional tasks and/or put extra special effort into specific tasks.

You are becoming experts on Health Care Delivery Systems. Between us, we will spend hundreds of hours in hospitals and health-related institutions this year (field trips, mentor experiences, field experiences, volunteering, etc.). Most of you will participate in job shadowing and begin internships next year. You have ideas about what works in health care and what health services are needed for a school-based clinic. You have ideas about how a student-run Health Education & Resource Center could be managed and about the sort of products students can create (brochures, newsletters) and activities they might run (Health Peer Education Projects, Brown Bag Lunch Speakers, Health Academy Puppet Theatre, etc.). As academy students, you

have real responsibility for helping to make the Clinic and Health Education & Resource Center a reality. Plan something brilliant!! Do a spectacular job. Your "salary" (i.e., marking period grade/final grade) and the future of our Health Clinic depend on the quality of work you do. All Sim Clinic Projects are due on _____ by 5:00 p.m.

Complete all four tasks that are marked with an asterisk, plus at least ten others. Sim Clinic project tasks include the following:

*Alpha Task: Write a mission statement.
*Beta Task: Model/graphic display, journal entry
Delta Task: Health resource survey/graph/journal entry
Gamma Task: Health needs assessment, survey, journal
Epsilon Task: Budget
Zeta Task: Brochure or research/recommend
Eta Task: Human resources/staffing plan
Theta Task: Health and safety plan and/or environmental impact study
Iota Task: Management
Kappa Task: Legal issues/legal guidelines
Lambda Task: Ethical issues/ethical guidelines
Mu Task: Cultural sensitivity
Xi Task: Health peer education
Omicron Task: Professionalism/confidentiality
*Pi Task: Clinic/center name and graphic
Rho Task: Marketing
*Sigma Task: Public relations

Alpha Task

Write a mission statement for the Health Clinic/Health Education & Resource Center.

A mission statement states the purpose of a program, school, project, etc. It tells why the Health Clinic/Health Education & Resource Center exists and how the students/school/community will be different because of the Clinic/Center. Who is the Clinic/Center for? What is the purpose or mission of the Clinic/Center? What are its goals? What will be achieved by having a quality health clinic/health center here? The school has a mission statement. The Kaiser School Partnership has a mission

statement. Your job is to think about the purpose and goals of a Health Clinic/Health Education & Resource Center and then create a mission statement for the High School Health Clinic and Health Education & Resource Center.

Beta Task

Create a model or graphic display of your dream health clinic task; design a model and/or graphic display of your proposed school-based health clinic.

You can either imagine that the clinic will be housed in two large connecting portables on the school grounds or choose another possible space on or near the school campus for your proposed clinic. If you decide to use portables, then find out from Buildings and Grounds the actual size and dimensions available. If you decide on another existing space for your proposed clinic, then measure and map the actual space which you propose to be used and/or remodeled.

You might design a new building or new addition to be built. You might plan to use an existing space (e.g., Room 300, and the adjoining shortage/work rooms). Either way, apply your best mathematics skills and creativity. Possibly work with a drafting/pre-engineering student as a resource to help you with architectural designs and/or computer-assisted design programs.

Related Assignment: As a Healthworks journal entry, each team member should write up the process of how your group brainstormed ideas; decided on a plan of action; made decisions about your design for the school-based health clinic; how you found the information you needed to be accurate; how everyone's best ideas, suggestions, etc. for how this space might best be utilized and developed were incorporated; what resources you used; and how you found them.

Beta Task Notes (on designing a successful Health Education & Resource Center)

According to *The Answer Is at School: Bringing Health Care to Our Students*, every school-based health center has to contain, at a minimum, these essentials:

- A waiting area that is not visible to people who aren't using the Health Education & Resource Center
- At least two examination rooms and a counseling room

- A small laboratory that contains a refrigerator, a microscope, a place to store blood specimens, and a sink
- A bathroom
- Separate telephone lines from the school's and an answering machine telling students how to obtain emergency services after hours
- Private areas—Rooms where consultations cannot be overheard. Offices and administrative space where staff can work privately with records.
- Secure areas—File cabinets and drawers that lock to protect medical records (Some health centers lock expensive equipment and medication in a sturdy cabinet.)

Space and Locale

> The most important thing is that you are in a part of the school that students can get to easily and that they see as part of the school's support services . . . A place where you can integrate counselors, administrators, and school nurses is best."
>
> *—Terrance Keenan, consultant, Robert Wood Johnson Foundation*

Sufficient size is important. Inadequate space can limit providers' productivity and impede the flow of services to students.

Warmth

> Making the facilities pleasant is important, because it says to the students, "We care."
>
> *—Christel Brellochs, director of School Health Medicaid Project*
> *Columbia University's School of Public Health*

The Health Center should be a welcoming place—clean, bright and attractive—that by its "look" tells students that this is a place where they will be treated with respect. Often students are involved in the design process: "At Taft High School in the Bronx, students helped choose the health center's colors, carpet, and furniture. And in Minnesota, students painted murals on the health center's wall" (The Answer Is at School: Bringing Health Care to Our Students).

Recommendations for Planning the Clinic Space

Laboratory

Environment

- visually private space
- adequate counter space for equipment
- electrical outlets (1 outlet for every 18 inches of counter space)

Equipment

- refrigerator for specimen storage
- sample-taking chair
- waste receptacle with lid
- infectious waste receptacles
- cabinet/area to stock daily supplies

Exam Room

Environment

- minimum space 8' x 9'
- exam table should be accessible from four sides
- private and soundproof
- door limits view into exam area

Equipment

- exam table and stool
- foot stool
- waste receptacle with lid
- gooseneck lamp
- cabinet/area to stock daily supplies

Patient Waiting Area

- chairs that can be arranged in various ways
- patient education display unit
- clock

Receptionist/Records Storage Area

- desk/work counter & chairs
- telephone

answering machine/fax machine
locked medical records storage files
photocopier
adding machine
adequate number of electrical outlets

For example, your final Health Clinic design might include the following:

- a waiting room
- a Health Education & Resource Center (also used for group counseling, health peer education sessions, etc.)
- an administrative office
- two exam rooms
- a lab
- a counseling office
- a file/work room/reception area
- a storage closet
- a restroom

At Berkeley High School, the Health Clinic is housed in several former classrooms which have been remodeled to meet the needs of the clinic—that is, some walls were removed, and other smaller rooms were created. In other schools, one very large classroom is used and then smaller rooms are added as needed. Where at our school/in our community should the Health Clinic be housed?

Gamma Task

Health Needs Assessment Survey

Design and administer one or more needs assessment surveys. What are the health needs of the student body of Oakland Technical High School? As perceived by the students? As perceived by the administration, faculty, counselors, and staff? As perceived by parents? As perceived by nearby health facilities and/or health professionals familiar with the student body? As perceived by the community?

Related Assignment: Each team member should include in her/his journal several entries and/or running notes of her/his team process of designing a needs assessment survey.

Before you begin, review the following "how to" process of taking a survey. Eight steps are involved: (1) define the topic; (2) identify the target group; (3) decide how to word the questions you ask; (4) decide what medium in which to ask the questions; (5) decide if there is other information you need from respondents; (6) design the form; (7) keep track of responses; and (8) analyze responses.

How To Take a Survey

Define the Topic

As a team, define the topic(s) which will form the focus of your health needs survey. Brainstorm possible health issues of importance to OTHS students. Review the work previously done on Writing To Change the World and other related projects. An easy way to start is to complete the following sentence: We want to find out what students (parents, etc.) feel are the critical health care needs at Oakland Technical High School. What questions should we ask? What health issues should we include? Review sample health inventories available in the Health & Bioscience Academy Library. Use these models to design your own health needs survey. Think through related issues and decide on additional questions to include. For example, will you build in a way for students (parents, teachers, etc.) to prioritize possible services to be offered by a student health clinic? If so, decide how you will do so?

Identify the Target Group

It is difficult to define what you want to find out without talking about who the target group is. Decide who you will survey—students, parents, teachers, etc. Decide how large a group you will survey. For example, will you try to survey the whole school (or all parents) or will you survey a portion of the school (or a portion of the parents). Will you create bilingual surveys for ESL students and parents? If you are surveying a portion of the entire group (e.g., 100 tenth graders), how will you make certain that the responses of the portion of the group you survey represent accurately the opinions of the entire group (i.e., entire tenth grade class).

As a team, decide on a method of random selection. For example, you might obtain a list of all students in the school and then survey every tenth name on the list.

Deciding How To Word the Questions You Ask

The way questions are worded significantly affects the responses people give. Spend time working together on the careful wording of your questions. Ask one of your health mentors and/or academy teachers to review your proposed survey before you administer it.

- Ask one question at a time.
- Do not prejudice the response. (Use neutral words—do not prejudice people positively or negatively.)
- Decide whether each question should be closed-ended or open-ended.

An aside: closed-ended vs. open-ended questions

Closed-Ended Questions

One type of closed-ended question asks the respondent to choose from answers arranged on a scale; another forces the respondent to choose from among pre-selected answers. An advantage of closed-ended questions is that they are easy to analyze. The disadvantage of closed-ended questions is that they limit the ways that people are able to respond. If you decide to use closed-ended questions, make certain that the answers are mutually exclusive and that you don't leave out important potential responses. Also it is possible to use closed-ended questions, but then to allow space for additional ideas, suggestions, comments, etc.

Open-Ended Questions

Open-ended questions are the opposite of closed-ended questions. They allow people to choose any answer they want, but they are difficult to analyze. An example, of an open-ended question might be "What is a serious health problem facing students at Oakland Technical High School?" One problem with open-ended questions is that the same concept can be worded in many different ways and you might have to decide which responses mean the same thing. Another problem is that to analyze your results, you may need to construct general categories that cover the many responses and that deciding which categories are best is often difficult. At the same time, open-ended questions often allow you to discover some issue you might not have considered in designing your survey.

Note: It is possible to include both closed-ended questions and open-ended questions in the survey you design. You decide.

Deciding What Medium In Which To Ask the Questions

Possible standard ways to ask survey questions:

- written questionnaires filled out by the respondents
- spoken questions/in person
- spoken questions/over the phone

Note: Written surveys can be handed out in person, done through particular classes with the cooperation of teachers you contact, or done by mail. Written surveys may provide the best form of documentation of your data collection.

Caveats: The best response rate you can expect by mail, even with stamped, return envelopes, is about 20-25%. If you choose to do a spoken survey, you need to write a careful script.

Other considerations for either written or spoken surveys include thinking through anticipated questions/issues. Make clear who is doing the survey and for what purposes the information will be used. Design the survey so that the instructions are in very clear and simple language. Make certain that you include instructions on how to record answers (i.e., if on a scale, what does "1" mean, "2" mean, "3" mean, etc.?; Should the respondent bubble in, check out, circle answers, etc.?)

Decide What Other Information You Need from the Respondents

For example, will you ask for names, gender, ethnicity, age, etc.

Design the Survey Form

- First, you need a system to identify each respondent. There are various reasons for this, especially making certain that you don't have duplicate responses. You can assign a number to each survey, etc. If several team members are involved in survey distribution, you need to make a careful plan so that you don't overlap (i.e., survey all English classes or all Social Science classes, but not both).
- Decide whether this is an anonymous survey or will each respondent include her/his name.

- Decide how to include the other information you have decided to collect—address, grade level, age, gender, etc.
- Write out each question. If the question is open-ended, leave space for a written response. If the question is closed-ended, supply all the possible answers. If you are using scales, explain them ("5" is strongly support and "1" is strongly oppose, etc.). Explain how the answer should be indicated (e.g., circle the response that you most agree with)
- If you are using an interviewer format and the interviewer is asking the questions and filling in the answers, indicate the interviewer's words very clearly.
- Identify WHO is conducting the survey and a contact at the school.

Keep Track of the Responses on Mailed and/or Written In-Class Surveys

Identify who on your team is responsible for

- Counting the responses.
- Keeping a running total of responses as they come in.
- Posting the total
- Identifying a secure place where all responses will be kept and making certain that they are put there immediately when they first come in.
- If relevant, checking off the respondents' names (or particular classes) on the master mailing list or survey roster, so you can keep track of who has, and who has not, responded.

You may need to telephone and/or send reminder notes or otherwise contact those involved to bring in missing responses.

Interviews

Identify who on you team is responsible for collecting questionnaires from the interviewers and keeping track of them. Their responsibilities include keeping track of all completed questionnaires, keeping the completed questionnaires in a secure place, keeping a running total of completed questionnaires, and posting the total.

Each interviewer is responsible for her/his questionnaires. She or he should possibly identify each questionnaire with a unique code number; review each form to make certain that it was filled in and that the writing is legible; count the total number of

responses in the batch; provide the total, and the completed questionnaires, to the student/team member responsible for keeping track of the forms.

Analyze the Responses

First, sort questionnaires to eliminate any that cannot be used (illegible, etc.). Using paper, do a simple tabulation of responses. Review your notes on how to analyze surveys and/or see an academy teacher for help. For example, you might set up a piece of paper (or section of a page) for each survey question. One team member might read through a pile of questionnaires, focusing on question #2, reading off the response, while another team member places a mark under the appropriate answer.
If you have used open-ended questions in your survey, you need to find general categories of responses and then tabulate the responses in each category.

It is also possible to use a computer database to analyze the results of your survey. Again, work with your academy math and/or science teacher or use one of the Academy Computer Network Resources to help you.

Assignment: Graph and or otherwise design a display or report of the results of your survey. Ask your academy mathematics or science teacher for help with how best to display your survey results. Ask your academy English or social studies teacher to suggest other methods of reporting the results of your survey; or work with one of the Health Academy Computer Network Resources (Bruce, Angelique) or peer educators to use a computer database and/or to design a graphic display of your resulting data and findings.

Do a journal entry in which you reflect on the results of the survey. What did you learn? What do your findings mean? What recommendations for policy and/or action would you make based on your findings? What surprised you? etc.

Delta Task

Do a survey of available health resources in Oakland.

Compare and contrast access to health care in at least two different neighborhoods. (We may choose to do this as a class, large group assignment with each team of students concentrating on a particular category or categories of health care delivery or with a particular type of health care service or facility to research.)

Goals: To map health resources in the Oakland community
To create a database of community health resources

Note: Since you have a limited time to complete this, perhaps pick some aspects of this survey? How could you find out about local health resources? What are possible sources of this information?

Additional Assignment: Graph and or otherwise design a display or report of the results of your survey. Ask your academy mathematics or science teacher for help with how best to display your survey results. Ask your academy English or social studies teacher to suggest other methods of reporting the results of your survey. Or work with one of the Health Academy Computer Network Resources (Bruce, Angelique) or peer educators to use a computer database and/or to design a graphic display of your resulting data and findings.

Additional Assignment: Do a journal entry in which you reflect on the results of the survey. What did you learn? What do your findings mean? What surprised you? Disturbed you? Pleased you? etc. What recommendations for policy and/or action would you make based on your findings?

Community Health Care Survey

Working alone or in teams, use the following questions to compare medical facilities in your neighborhood with those in another neighborhood. If possible, contrast a low-income and middle-income area in your survey.

In your journal, complete several reflective entries as you work on this survey. (See journal assignment on previous page)

Medical Services/Facilities	*Your Neighborhood*	*Other Neighborhood*
Number of Family Practitioners (use telephone book and clinic/hospital rosters to determine number of doctors serving a given area)		
Number of Specialists		

Medical Services/Facilities	*Your Neighborhood*	*Other Neighborhood*
Doctor/Patient Ratio (use census data to determine patient load in a given geographic area)		
Number of Hospital Interns		
Number of Hospital Administrators		
Number of Nurses		
Number of Paramedical Staff (technicians, counselors, etc.)		
Hospitals:		
Number of hospitals		
Number of beds		
Average cost per day		
Mobile Health Units:		
Staff size		
Average cost per patient call		
Out-Patient Clinics:		
Staff size		
Average cost per patient		
Ambulance Service(s):		
Number of units		
Cost per service		
Private Nursing Homes:		
Staff size		
Average cost per patient		
Public Nursing Homes:		
Staff size		
Average cost per patient		

Medical Services/Facilities	*Your Neighborhood*	*Other Neighborhood*
Mental Health Facilities:		
Staff size		
Average cost per patient		
Public Health Education:		
Programs		
Staff size		
Budget		
Free Medical Clinic(s):		
Staff size		
Budget		
Health Programs for the Homeless:		
Staff size		
Budget		
Home Health Care Programs:		
Staff Size		
Average cost		
Hospice Care Program(s):		
Staff size		
Average cost		
Health Support Groups (i.e., sickle cell, asthma, diabetes, AIDS/HIV, etc.):		
Staff size		
Budget		
Environmental Health Programs:		
Staff size		
Budget		
Infection Control Programs:		
Staff size		
Budget		

Medical Services/Facilities	*Your Neighborhood*	*Other Neighborhood*
Occupational Hazard Programs:		
Staff size		
Budget		
Gyms/Fitness Centers/Programs:		
Numbers served		
Average cost		
Nutritional Programs:		
Numbers served		
Average cost		
Drug/Alcohol Abuse Programs:		
Numbers served		
Average cost		
Adolescent Care Facilities:		
Numbers served		
Cost/budget		
Prenatal Health Care Programs:		
Numbers served		
Average cost		
Programs for Special Needs Groups/ Physically Challenged (i.e., blind, deaf, partially paralyzed, etc.):		
Staffing		
Budget		
Programs Which Respond To Particular Ethnic/Cultural Health Concerns:		
Staffing		
Budget		

Medical Services/Facilities	*Your Neighborhood*	*Other Neighborhood*
Other Medical/Health Services/ Facilities in Our Community:		
Staffing		
Budget		

Additional Questions

1. What happens to people who are poor? Do they receive the same health care and protection of privacy as wealthier members of the community? Do local private hospitals turn away from their emergency rooms people who cannot afford to pay? Do welfare mothers have access to a well-baby clinic? Prenatal care?
2. Do members of the community have any voice in the operation of local medical facilities?
3. Are police and/or insurance company representatives given medical information concerning a patient/individual without the consent of the patient/ individual?
4. What is the amount per capita spent by the Alameda Country Health Department? The Oakland City Health Department?
5. In the two neighborhoods you have surveyed, what is the relationship between environment/housing conditions and the presences of any communicable or environmentally caused diseases?
6. What effect does local air and water quality and/or pollution have on the community's health?
7. Do government agencies sponsor any kinds of preventative medicine clinics/ wellness programs within your community?

Based on Your Survey . . .

Prioritize services offered by a school-based health clinic and develop a matrix of services to be offered, by whom, when, etc. (Think about how we might interface/work with/access available community health resources.)

Epsilon Task

Using real budgets from at least two currently operating school-based health clinics as a model, *develop a realistic operational budget for a school-based Health Education & Resource Center at Oakland Technical High School.*

Imagine that the Health Education & Resource Center has an annual operating budget of $140 per student, or approximately $217,000 and an additional budget of $100,000 start-up funds for equipment/supplies/etc. **Note**: Costs vary, depending on geographic location, number of personnel, scope of services, and a variety of other factors. In 1991-1992, for example, 24 school-based health centers around the country had annual expenses which ranged from $130,000 to $325,000. Staff salaries and benefits composed 80-90% of the total costs. Costs can be kept low as shown by Denver's school-based health centers which provide comprehensive health services for only $125 per student per year.

According to *The Answer Is at School: Bringing Health Care to Our Students*,

- "the bottom line on the cost of running a school-based health center: Pennies of prevention are worth dollars of cure."
- "Additional expenses include laboratory work, x-rays, medications, medical supplies, equipment maintenance, office supplies and insurance. "
- "School-based health centers pay the bulk of these expenses with money from grants, Medicaid billing, and government appropriations, but in-kind contributions play a key role in every health center's budget. Space and utilities are usually provided by the school, medicines are often donated by pharmaceutical companies or the health center's sponsoring institution, and frequently local hospitals and health agencies pay a portion of staff salaries."
- "In-kind contributions are a wise community investment, because school-based health centers help reduce demands on the budgets of hospitals, health departments, and other public agencies."

Notes for Epsilon Task

School-based health center sample budgets include:

Expenses

Personnel (**Note**: one of these positions also serves as clinic coordinator.)

- Nurse practitioner or physician assistant

- Clinical social worker
- Receptionist/data entry clerk
- Other staff, including physician, nurse, nutritionist, health educator, substance abuse counselor, etc.

Fringe Benefits

Other Operating Expenses

- Laboratory
- Medical supplies
- Pharmaceuticals
- Office supplies and medical records
- Telephone
- Staff travel
- Professional insurance
- Printing/duplicating
- Patient education materials
- Staff development/training
- Equipment leases, if applicable (e.g., photocopier and computer)
- Rent (usually school-district in-kind contribution)
- Utilities (usually school-district in-kind contribution)

Revenues

- Operating Revenues
  - Medicaid
  - Private Insurance
  - Managed Care Contracts
- Non-Operating Revenues
  - In-kind contributions
  - Private grants
  - State/local revenues
  - Federal grants

Zeta Task

Imagine that the Oakland Technical Health Center will offer some of the services listed on the following page. Then choose one (or more) of the following activities for your work sample.

- Design a brochure for the clinic that features the services the Oakland Technical Health Center will offer.

  OR

- Design a brochure for the student-run Health Education & Resource Center aspect of the Oakland Technical Health Center.

  OR

- Choose one of the following services and research the health issue involved, available community resources, etc. Make a recommendation for specific services the Health Clinic/Health Education & Resource Center should offer regarding this particular service. You may be creative about the form in which you make your recommendation (e.g., write a letter to the principal, prepare a speech you might give to the Health Clinic/Health Education & Resource Center Advisory Board, etc.).

Health Clinic Services

- Diagnosis and treatment of minor and acute illnesses
- First Aid for minor injuries
- Physical examinations (general, sports, preemployment)
- Blood pressure testing
- Assistance with chronic (ongoing) illnesses
- Immunizations
- Dental and vision and hearing screenings
- Skin care
- Laboratory service
- Prescription and over-the-counter medications
- Education relating to diet and weight control
- Drug and alcohol prevention
- Anti-tobacco
- Physical fitness
- Stress reduction
- Mental health
- Sexuality and pregnancy prevention (including abstinence)
- AIDS and sexually transmitted disease (STD) prevention

- Referrals for health care services which cannot be provided
- Diagnosis and treatment of STDs
- Pregnancy testing, contraceptives, and referral for prenatal care
- Crisis mental health counseling
- Alcohol and substance abuse counseling

Additional Health Education & Resource Center Offerings

- First Aid and CPR training
- Information on health issues (multimedia resource library/center) such as books, films, software, and computer access to health information
- Health peer educators
- Teen Wellness Newsletter
- Teen health pamphlets
- Fitness workshops
- Wellness and health issues workshops, symposia, fairs, etc.
- Health careers information

Eta Task

Research and write a brief report on the human resources needs for your school-based Health Education & Resource Center. Develop a Health Center Staffing Plan.

What are the Clinic's staffing needs? How many personnel are needed? What health professionals are needed? What other staff are needed? What roles will students play in running the Clinic/Center? What are the approximate hours needed per week (etc.) for health professionals involved? For other staff? Student staff? etc.

Realistically, funding will be limited. Prioritize staffing needs based on the total funding available for staffing in your Health Education & Resource Center budget.

Note: See suggested health center personnel under Budget Task.

Research staffing at other school-based health clinics and use your research as a basis for your own staffing plan. Research possible roles students might play in running the Clinic/Center and use your research in writing up your ideas of possible student roles.

Theta Task

Develop a Health and Safety Plan and/or an Environmental Impact Study for the Oakland Technical High School Health Education & Resource Center.

- Research and develop a Health and Safety Plan for the Clinic Center. What health and safety issues are involved? What guidelines are needed?

  AND/OR

- **Environmental Impact**: What are the environmental issues involved in creating a school-based health clinic at Oakland Technical High School? (speakers/focus group discussion facilitators from Kaiser Planning and from the Environmental Protection Agency) What might be the impact of a Clinic/Center on the environment of the school? On the environment of North Oakland? etc.

- Research and write up and/or display the results of your Environmental Impact Study.

Iota Task

Develop a plan for a health clinic/center governance or management structure which includes health professionals, students, parents, school administration, faculty, and the community. Research how similar Clinics/Centers are governed and managed. Emphasize Collaboration and ways to share the workload/responsibilities. Write up and/or display your governance plan. (Perhaps develop a governance structure chart).

Student Projects and AAI

Oakland Health & Bioscience Academy

Senior Projects

Project Announcement

The purpose of this announcement is to provide a preview of what is ahead for spring semester. Academy Seniors are each required to complete a major Senior Project related to some aspect of the health/science industry. We encourage you to do some initial topic browsing, research, and note-taking/journal writing in the next few weeks.

Your Senior Project will involve the following:

- Research (which includes interviews, observations, and other experiences/ searches involving primary sources)
- Connections and engagement with community (ideally each project will be of benefit to Oakland Technical High School, the greater community, and/or an even larger community)
- A project log (to be kept daily; to record all work done on project)
- A reflective journal which demonstrates clearly the depth of your exploration and learning (ideas for journal entries provided)
- An all-aspects-of-the-industry pictorial representation/grid in which you demonstrate your understanding of how your topic relates to various aspects of the health care/bioscience industry
- A final tangible product that is of use to others (i.e., computer module, film, play, multiple-page newsletter, health education pamphlet, complex visual display) and demonstrates quality work, effort, and rich understanding on your part
- A formal presentation which includes visuals (display board, photos, film, slides, etc.) to an audience of advisors, health/science professionals, parents, teachers, and fellow students

Each student and/or student team will need the following:

- An industry/postsecondary/community coach or project advisor (commitment of several meetings with individual or team)
- School coach (Academy teacher/staff, other teacher/staff)

Examples of Senior Project Topics might include the following:

- Health issues of the homeless in Oakland with resulting student research/report/ recommendations presented to the City Council

- Folk medical practices/home remedies of a particular culture with resulting student-produced booklet shared with community health agencies/facilities
- Variety of topics related to planning/development of the school-based Health Clinic and/or Health Education & Resource Center
- Community-based action in existing health projects (i.e., work with the American Lung Association on an Anti-Tobacco Project aimed at teens)
- Work with the YWCA/Asian Health Center/Black Quality Health Care Consortium, etc. on AIDS education
- Research on teen asthma and development of a packet of information for the Health Education & Resource Center
- Research on some particular ethical/legal/economic issue in health/bioscience and a related project
- Development of a teen's guide to health care reform
- Development of an Oakland Health Care Resources Guide for Senior Citizens or a Health Care Resources Guide for Teen Parents
- A project on violence as a health care issue (i.e., medical cost of street violence and medical intervention in conjunction with Alameda County Medical Center's project on violence)
- Research on women's health issues or men's health issues or athletes' health issues or health and environmental issues particular to schools
- Development of a business or management plan for the school-based health clinic

Additional Information

- Each student or student team will choose her/his/their own Senior Project topic.
- Students will be encouraged to choose topics about which they feel passion and/or great interest, concern, or curiosity.
- Projects which are directly related to Academy Internships or specific aspects of your academy experience are encouraged.
- Each senior will put in a minimum of 100 hours on her/his project.
- Approach your topic from multiple angles.

All interested academy seniors are invited to participate as part of the Senior Projects Team as we meet together to develop Senior Project Guidelines and Criteria and to build in support and resources for the extraordinary Senior Projects which will result.

OAKLAND HEALTH & BIOSCIENCE ACADEMY

A PERFORMANCE 'FINAL' ACROSS THE DISCIPLINES

(adapted from idea by M. Nickle, Springdale, Arkansas)

During this year in the Academy, we have spent much of our time looking at health care delivery systems, especially in America. Reflect on the work you have done to increase your knowledge of health care delivery systems---i.e., the Sim Clinic Project, the history of health care, essays and articles related to health care delivery issues, speakers, work on Healthworks Task Forces, films, research, field experiences, field trips, knowledge gained from your mentor, references to what you have read/seen in the news, etc. Discuss health care delivery systems. What have you learned? What is important about what you have learned? Based on what you have learned, what are your recommendations for the best possible health care delivery system that America could decide on as a major part of the health care reform effort? Why is your proposal 'best?' What are its strengths? What are the barriers to overcome? What are the solutions?

PROCEDURE: ***DAY ONE OF THE PERFORMANCE EXAM:*** You will be given four Academy periods in which to brainstorm, develop an outline, write a rough draft, and write a final copy in standard composition form. You may use a computer or you may write your essay long hand. You will be evaluated not only on how well you assimilate the material but also on how well you reflect the "student as worker" metaphor and how responsibly you act/use your time during the "testing" period. You may use any available resources.

NOTE: Write your name on the cover sheet of your completed essay, but please do not write your name on each sheet. (Each student paper will be given a number and this will help to facilitate the evaluation of 'anonymous papers' on Day Two. Please attach and turn in all your work: brainstorm, outline, rough draft (if appropriate, in that you might revise on the computer) & final copy. Your final copy should be directly under the cover sheet with the other work following.

DAY TWO OF THE EXAM: You will assemble in 'villages' of three, evaluate anonymous papers according to a set of criteria, and come to a consensus about a grade. Each paper will be evaluated by at least two groups and two instructors. Again, a part of your overall semester evaluation will have to do with how responsibly you act/use your time and how well you demonstrate the 'student as worker' metaphor.

Postsecondary Articulation

Merritt College Program of Radiologic Technology

Contrast Media Studies/Advanced Radiographic Procedures Individual Project Assignment

Instructor: Jennifer Yates, B.S., R.T.(R)

Objective

The objective of this assignment it to look at a particular advanced level diagnostic or therapeutic procedure from a number of different angles that you may not have considered before. You will be exploring the procedure from the patient's point of view, the technologist's point of view, the radiologist's point of view, and the department manager's point of view. In situations where applicable, you may be asked to look at the roles of other health care team members. You will also be exploring the effects of "outside forces" (such as patient's ability to pay, availability of on-site high-tech modalities, etc.), on individual patients' access to health care.

General Instructions

•For the exam that you choose, you must be **physically present** during the procedure that you will present in class.

•You are responsible for copying films that you will use for the presentation (for exams with large numbers of films, for example a CT, MRI, or Angio procedures; have the technologist help you choose about 5 that best demonstrate the body part and pathology).

•For the most part, your presentation will be oral only. You do not need to write up a formal written report. Hand in your films and notes that you use for your presentation. You will be graded on the completeness of your presentation (whether or not you cover all items on the "All Aspects" Exploration, and Procedure Objectives), and the quality of your visuals (films, transparencies, samples of supplies, etc.). I will make transparencies for you if you give me the paper copy at least 1 week before your presentation.

•When you do your presentation in class, first go over the Case and Radiograph Presentation, then cover the "All Aspects" Exploration part of the project.

•Be prepared to do your presentation on the day we cover that section of the anatomy in class. If you are not sure when that is SEE ME. Projects not ready for presentation must be handed in in written form at the next class session and will automatically receive a 20 point grade deduction. For each subsequent day late, another 10 points will be deducted from the project grade.

Contrast Media Studies/Advanced Radiographic Procedures Individual Project Assignment

Case and Radiograph Presentation, Interventional Procedures (Fluoro or Angio)

Your oral presentation should include all of the following:

A. Procedure Knowledge

1. **For this patient:**
   Patient's previous history
   Reason for procedure/type of pathology
   What diagnostic exam was used to identify pathology?

2. Explain procedure
3. Identify imaging system used
4. Positions/views taken for this procedure
5. Materials for set up (include type of sterile tray, etc)
6. Identify type(s) of contrast used (if applicable), and why this type was chosen by the radiologist.
7. If catheters, guidewires, accessories are used, relate the catheter tip configuration used (bring examples if possible).
8. Identify premedications for pt., if any.
9. Identify additional meds given to pt. during procedure, if any.
10. What was the outcome of this procedure?

B. Radiograph Presentation

1. Present Radiographs, point out pathology and any instruments used for the intervention that may be visible on the radiographs.

2. If possible, present a set of post-procedure radiographs demonstrating the success or failure of the interventional portion of the exam.

For Vascular and Non-Vascular Interventional Procedures performed in Angio or under fluoroscopy.

Contrast Media Studies/Advanced Radiographic Procedures
Individual Project Assignment

All Aspects Exploration

1. What "high tech" equipment is necessary for this procedure? List anything you would not use for a routine procedure in the radiology department. Include patient monitoring equipment that may be necessary.

2. What is the **purchase price** and **year of purchase** for the imaging system or the most important piece of equipment you listed (choose the one most important for completion of the procedure; for example, the actual MRI scanning unit, the Angio Suite including digital recording unit and tube, table, etc.)?

3. How much time does the entire procedure take, from initial set-up and pre-procedural patient care to clean-up, post-procedural patient care, and making "hard copies" of the exam?

4. List the health care team members utilized by your hospital for this procedure. Explain the role of each person on the team (for example, for an Angio procedure a hospital may utilize: 2 technologists, responsible for imaging and setting contrast injection sequences, and assisting the physician with the catheters, guide wires and accessories; a dept. nurse responsible for monitoring the patient, giving medications, and post procedural care; the radiologist responsible for the invasive portion of the procedure).

5. What is the cost of this procedure to the patient (do not include radiologist reading fee. Since it is billed separately by the radiologist, not the hospital, you probably won't be able to find this out anyway)?

6. What additional tests, exams or procedures were ordered on this patient to assist in treatment or diagnosis?

7. What procedures, tests, or exams are available that yield similar information or results to the one you chose for your presentation?

8. How does the procedure performed compare in **cost** to other exams, tests or procedures that would yield similar information or results?

9. How does the procedure performed compare in **patient radiation dose** to other exams, tests or procedures that would yield similar information or results?

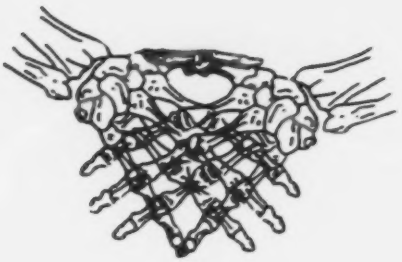
10. How does the procedure performed compare in **patient discomfort level** to other exams, tests or procedures that would yield similar information or results?

11. How does the procedure performed compare in **general risk to the patient** to other exams, tests or procedures that would yield similar information or results?

12. How does the procedure performed compare in **risk to health care personnel (from a universal precautions standpoint)** to other exams, tests or procedures that would yield similar information or results?

13. If possible, from looking at patient's chart or x-ray request, attempt to discover how the patient will pay his/her bill? Do they have health insurance, medical, are they self pay? Discuss the impact that method of payment may have had on the particular procedure/s ordered on this patient.

Partners in Tech Prep



Oakland Technical High School Health Academy

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Merritt College Radiologic Technology Program

Radiology Apprenticeship Log Book

DRAFT

Diagnostic Imaging Apprenticeship Log

Student Name:_____

Period of Apprenticeship from _____ to _____
(date) (date)

Hospital:_____

Name of Supervising Radiologic Technologist:_____

Name of Oakland Technical High School Teacher sponsoring apprenticeship:

_____

Merritt College Program of Radiologic Technology
4/26/94 (Draft #6)

DRAFT

Medical Imaging Apprenticeship Project Agreement

In March of 1993, a Memorandum of Understanding was signed by W. Darrell Ovid, Principal of Oakland Technical High School; Pete Mesa, Superintendent of Oakland Unified School District; Lincoln Hall, then acting President of Merritt College; and Robert J. Scannell, Chancellor of Peralta Community College District. The memorandum represents a confirmation of the agreement between Merritt College and the Health Academy at Oakland Technical High School, to develop a Tech Prep program in radiologic technology.

As part of the 1991 Carl Perkins Act, Tech Prep involves articulation from a secondary to a post-secondary vocational education program. It includes the integration of academic and vocational education and is developed in partnership between secondary and postsecondary institutions and industry.

The articulation model used for the basis of this agreement is a **Time Shortened** model. Using this model, the prerequisite courses required for entry into the Merritt College Program of Radiologic Technology can be completed by students attending Oakland Technical High School Health Academy. Three of the four prerequisite courses, including Health Academy Physiology, English Cornposition and Reading (Senior English), and Elementary Algebra are taught on site at the high school. These courses have been evaluated and accepted for equivalency to Merritt College Bio 24, Eng 51A, and Math 201, respectively. The fourth prerequisite, Survey of Radiologic Technology, taught at Merritt College only, is available to Health Academy students in Spring Semester of their Senior year (second section, 2nd nine weeks of course offering only). This articulation agreement allows Health Academy students to complete prerequisites in a shorter period of time than is usually required.

Since the Merritt College Progam of Radiologic Technology is an **impacted** program (many more applicants per year than allowable class size), acceptance into the program is competitive and involves a **point ranking system** based on prerequisite grades and Associate Degree requirements completed before entry. There is no guarantee of acceptance into the program simply by completing the prerequisites and the apprenticeship.

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The Health Science Dean and Radiologic Technology faculty at Merritt College have approved, as part of the Articulation Agreement between Oakland Technical High School Health Academy and the Merritt College Program of Radiologic Technology, the opportunity for Health Academy students to gain 3 Program Ranking points (utilized in selection process for entry into the program) by participating in an apprenticesphip program related to radiologic technology. To gain these points, the following requirements must be met:

1) Completion of a minimum of **40 hours** apprenticeship experience in a hospital **radiology department**.

2) Successful completion of specific skills (requiring direct supervision), as outlined in the Apprenticeship Log. Completion must be documented by a Certified Radiologic Technologist in the hospital radiology department.

3) A presentation of a **Case Study** for student's classmates. Presentation will consist of radiographs and information gathered at the worksite about a particular patient (see last page of log for specific format). The format at the end of the log should be followed with all questions answered. The presentation may be given at the hospital site or the school classroom, but must be documented by the supervising Radiologic Technologist, or an Oakland Technical High School Health Academy teacher.

DRAFT

Skills Rating

Objective: in order for Apprenticeship students from Oakland Technical High School Health Academy to be granted ranking points for consideration for entry into Merritt College Program of Radiologic Technology, all of the following **skills** must be performed competently and documented by the supervising Radiologic Technologist in the radiology department in which the apprenticeship takes place.

Competency: The level of competency will be to the satisfaction of the supervising radiologic technologist and will be evaluated at the end of the apprenticeship according to the following scale:

0 = needs more work in order to achieve an acceptable standard of competency for skill.

+ = has met or exceeded acceptable standard of competency for skill.

Supervising Radiologic Technologist: please **initial** the appropriate box for each skill.

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Key Skills

Work Habits/Communications	Comments	+	0
1. Adheres to punctuality/attendance standards of Radiology Department (calls in before start of shift if ill, adheres to schedule).			
2. Answers phone in a courteous, professional manner. Gives correct information to caller or transfers call to appropriate personnel/department.			
3. Takes complete, legible phone messages, gives to appropriate person.			
4. Follows directions given by physicians, supervising technologists, and other hospital personnel.			
5. Asks questions, requests information at appropriate time (out of earshot of patients, when department workload allows).			
6. Practices active listening to enable understanding of information or directions.			

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Patient Care/Interaction	Comments	+	O
1. Observe patient confidentiality by **not** discussing personal information about a patient with **anyone not directly involved in their care.**			
2. Responds to patients in a respectful, caring manner.			
3. Identify patient by calling out full name, verifying by checking ID bracelet.			
4. Follow Universal Precautions procedures and policies during all patient contacts and radiographic procedures set-up and clean-up.			
5. Escort ambulatory patients between the waiting room, dressing rooms, and the examination rooms.			
6. Transport patients by wheelchair or gurney from patient holding area to examination rooms.			
7. Assist patient onto or off of table(s), stool or bed while avoiding patient or personal injury.			
8. Demonstrate proper body mechanics and/or use of mechanical transfer devices.			
9. Prior to start of x-ray examination, place lead aprons or shields over gonad area of patients in pre-childbearing or childbearing age.			
10. Instruct and assist patients with dressing gowns and removal of radiopaque objects from the body area to be x-rayed.			

DRAFT

Patient Care/Interaction	Comments	+	O
11. Demonstrate the ability to obtain: Blood Pressure, Temperature, Pulse, Respirations, and correctly record the results of at least 3 patients.			
12. Obtain patient's permission and observe at least one each of the following exams:			
Chest X-ray			
Barium Enema			
Upper GI			
IVP			
Extremity (Ankle, Foot, Toe, Hand, Wrist, etc.)			
13. Display the ability to deal with people and difficult situations without inflamming; the ability to say and do the appropriate things with diplomacy.			

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Record Keeping/Equipment	Comments	+	O
1. Deliver paperwork to and from the front desk.			
2. Locate storage area and assist in the stocking of the x-ray examination rooms with linens and supplies on an "as needed" basis.			
3. Identify the following sizes of x-ray film cassettes:			
14 x 17			
11 x 14			
7 x 17 (if department uses these)			
10 x 12			
8 x 10			
4. Under sterile/medical aseptic conditions, prepare contrast media for:			
1. an Upper GI exam (Barium Sulfate)			
2. a Barium Enema exam (Barium Sulfate)			
3. Intravenous Pyelogram (Iodine)			
5. Change linens, clean, wash, disinfect an/or sterilize facilities and equipment (e.g. cassettes, tabletops).			
6. Dispose of contaminated items (observing Universal Precautions) in preparation for the next examination.			
7. Locate and retrieve previous patient radiographs; combine radiographic requisition and radiographs for interpretation and filing.			

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Darkroom	Comments	+	O
1. Demonstrate use of the "flash" camera by imprinting identification information onto film.			
2. Process exposed film by unloading cassette and feeding it into automatic processor.			
3. Reload cassettes by selecting film of proper size and type.			

I Certify that this student has completed _____total hours

of apprenticeship experience in the department of Radiology.

Signature: _____

Title: _____

Date: _____

Case Study-Oral Presentation DRAFT

Instructions:

Present to your classmates a case history of a patient whose exam you observed during your apprenticeship. Be sure to remove all personal information such as patient's name and birth date, physicians' names, and hospital name from radiographs and reports.

Include in your case study:

1. Diagnostic examination(s) performed on patient (X-ray, Ultrasound, M.R.I., Angiography, Mammography).

2. Patient's history: what,where, when? Why are they having this exam? What kinds of symptoms, complaints, do they have? Where is their pain located? What is the age and sex of patient.

3. Explain the x-ray procedure, including any equipment, contrast media used.

4. Who perfomed the examination?

5. What other support staff were involved with the examination (i.e. receptionist, transporter, darkroom tech, clerk, transcriptionist)?

6. Present copies of the radiographs from the exams (or use teaching files of similar films). Point out anatomy and any pathology demonstrated on the film (fractures, etc.).

7. Discuss the findings of the exam. Summarize the radiologist's interpretation.

8. Answer each of the following question regarding this patient's case history and examinations:

   a. Discuss possible outcomes for this patient.

   b. Might they be scheduled for surgery to correct the problem?

   c. Is there a medication they may need to take?

   d. What other tests might be ordered on this patient to give the physician more information for a diagnosis and treatment?

   e. How did radiography influence to outcome of this case; and how might radiography be used in the future for this patient?

I certify that this student satisfactorily completed the Case Study and Radiograph Presentation at: :

_____.

Signature of supervisor or teacher:_____**Date:**_____

DRAFT

UNIVERSAL PRECAUTIONS FOR HEALTH WORKERS TO USE IN THE CARE OF ALL PATIENTS

For many years, "Isolation" has been viewed as the cornerstone to a program of infection prevention and control. This concept is an outgrowth of early practices of placing people with selected diagnosed diseases in quarantine.

In modern health care settings, it is more reliable to provide a high leVel of infection control precautions for all patients, regardless of whether or not an infection has been diagnosed.

The reason that "UNIVERSAL PRECAUTIONS" should be used with all patients, is that:

1. Isolation procdedures often were not initiated until a diagnosis of a suspected infectious disease is proved. The causative agent was present in the body site or substance before the diagnosis was established, and transmission had often occurred before isolation was begun.

2. Infectious diseases occur in a variety of forms, ranging from the inapparent, unrecognized infection to a moderate or severe illness. Inapparent infection may not be recognized, yet be communicable to other people.

3. Isolation focuses on special techniques for only those body substances identified as containing the infective agent. Other substances are handled without the awareness that they also may be colonized with the same microorganism. For example, a person may be isolated for a wound infection, and the same organism may be present in his sputum, and be spread to others by that route.

4. The majority of people receiving health care, do not require strict Isolation procedures, and personnel feel a false sense of security when caring for these people, and may become careless in carrying out procedures designed to prevent the spread of infectious agents between people.

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UNIVERSAL PRECAUTIONS:(BASIC GUIDLINES)

1. Handle the blood of all patients as potentially infectious.
2. Wash hands before and after all patient and specimen contact.
3. Wear gloves for potential contact with blood and body fluids.
4. Wear gloves when splash with blood or body fluids is anticipated.
5. Wear mask for TB and other respiratory organisms.
6. Wear protective eyewear and mask if splattered with blood or body fluids.
7. Place used syringes immediately in nearby impermeable container, do NOT recap or manipulate needle in any way.
8. Treat all linen as soiled and infectious.
9. Process all laboratory specimens as potentially infectious.
10. Place resuscitation equipment where respiratory arrest is predicable.

Before a student will be assigned to a patient with a known communicable disease, the student will be required to have had prior experience supervised by their clinical supervisor /college instructor with Universal Precautions.

I have read the above Universal Precautions Guidelines and agree to follow these 10 precautions during my apprenticeship in the radiology department.

Student Signature: _____

Date: _____

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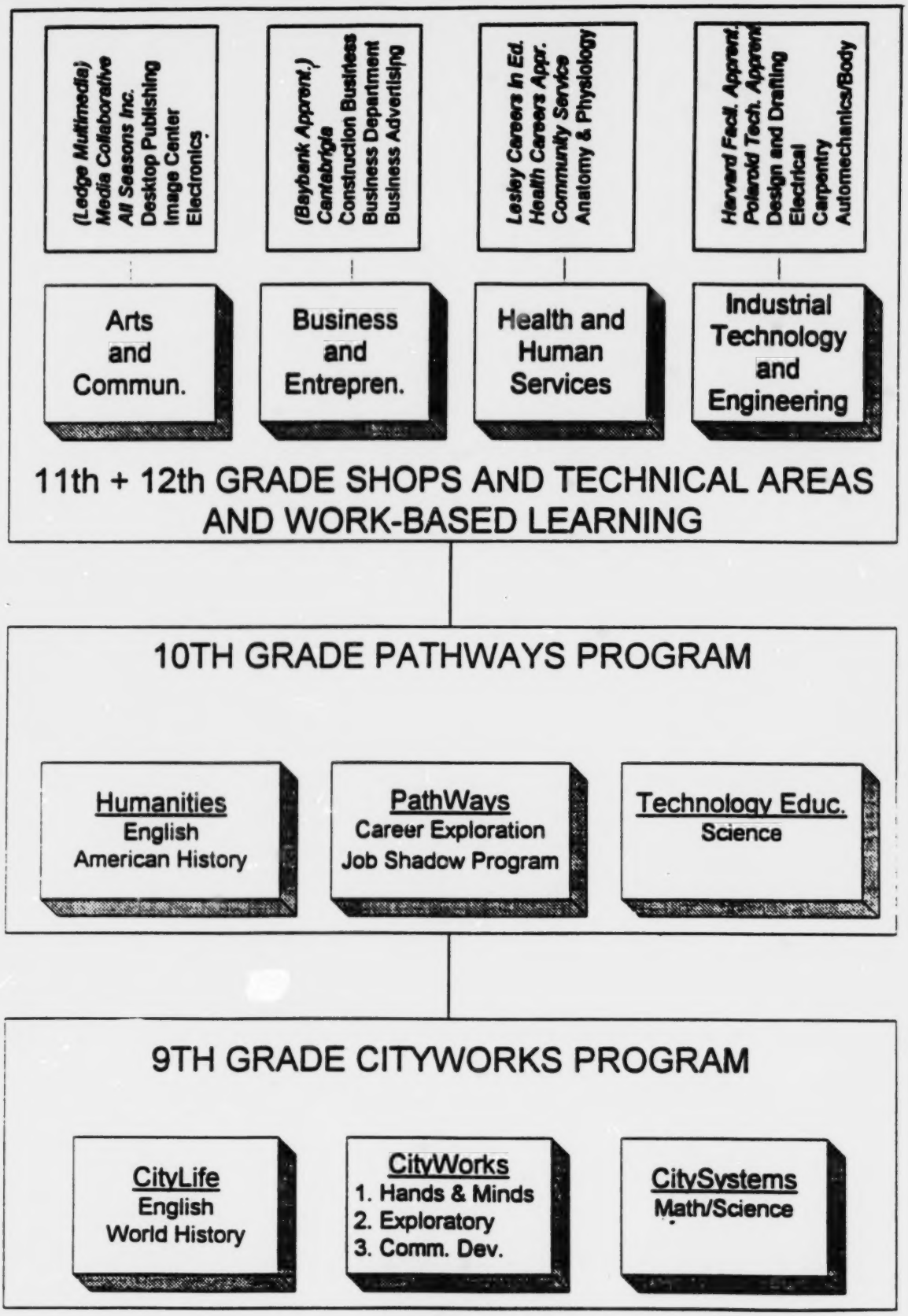
For these reasons, it is now advised that a consistent approach be used to handle body substances from all people, to prevent the transmission of infectious agents. This approach is call "UNIVERSAL PRECAUTIONS".

An outline of these precautions, as designed by the Centers for Disease Control (CDC), are as follows: (It is expected that you will read these, understand them, and implement them in all patient care areas.)

Generally speaking, Merritt College School of Radiologic Technology will follow the accepted standards of care of affiliated institutions with regards to Universal Precautions. Therefore, radiologic technology students must use precautions with blood and body fluids from all patients to protect themselves from exposure to HIV and other communicable diseases. These precautions also protect against other infectious organisms.

Rindge School of Technical Arts

Overview: Our School



RSTA 130

Vocational Integration with Academics

PORTFOLIOS AT RSTA

WHAT IS A PORTFOLIO?

It is a collection of your work that tells the story of your growth as a learner. It shows what you know and can do.

WHAT'S THE POINT OF KEEPING A PORTFOLIO?

FOR YOU

1. To keep track of what you are learning.
2. To think about what interests you, what you have accomplished, and what else you need or want to learn.

FOR OTHERS

1. To show colleges and employers the quality of your thinking and the range of things you know how to do.
2. To use as the basis for writing college admissions essays, job letters, and applications.

HOW PORTFOLIOS WORK AT RSTA:

- You will design and construct a portfolio holder in CityWorks.
- During the last week of each quarter, you will have time in each of your classes to organize your work folders and write about what you learned. (Quarters end Nov. 9, Jan. 26, April 4, June 18)
- At the end of each quarter, you will combine all of your work folders into the CityWorks portfolio holder, which will be stored in the CityWorks room and will be accessible to all of your RSTA teachers.
- Beginning in third quarter, you will start to make selections from all of your work folders for your Final Ninth Grade Portfolio. You will select work that says something about, or sheds some light on how you think about the following four areas:

  The Natural/Physical World
  The Social/Cultural World
  Language and Communication
  The Working World

- Near the end of the school year, you will each discuss your Final Portfolio with a panel, including one or two of your ninth grade teachers, as well as at least one outside reader.

The Tenth Grade in 1993:
Industries and Humanities

Course Outline: Industries, 1993-94

I. Introduction/Overview (Week 1)

A. Overview

Introduction
Competencies for Work and Life
Competencies Questionnaire
Competencies Checklist
Design Brief (To be developed by each teacher)

B. Getting an Idea for a Business

Creating a New Product (A different Spoon)
Finding Business Opportunities at CRLS
Trash to Treasure (in conjunction with Humanities)

II. Tools, Technologies and Materials (Weeks 2-3)

A. Resource Assessment

Getting Started
Planning Sheet (Resources We Have and We Need)

B. Health and Safety

Health and Safety Features in RSTA
Workplace Hazards
Health and Safety Audit

C. Tools and Technologies

Hands on activities in the shop

III. Research and Planning (Weeks 4-5)

A. Assessment of Business Environment

What can you buy at CRLS?
CRLS as a Business Environment
Survey of Businesses at CRLS

B. Needs Assessment

Groups at CRLS
Knowing What People Need

C. Learning from Competitors
- Yellow Pages
- Interviewing Within Your Industry
- Field Trip

D. Profiling the Customer
- Youth in the Economy
- I Buy Therefore I Am (REAL)
- Paper Dolls (REAL)

IV. Starting-Up the Business (Week 6)

A. Testing the Product or Service
- Prototypes
- Sneak Previews

B. Organizing the Business
- Operating Plan
- Job Descriptions
- Interviews
- Keeping Track of Orders

C. Marketing Strategy
- Wanna Hear About My Business (REAL)
- Marketing Plan (NIFTE)
- Selling an Image
- Test Marketing Plan (REAL)
- One-minute sales pitch (NIFTE)
- Who Said That? (Ads)

D. Running the Numbers
- Breakeven Analysis (REAL)

V. Operating the Enterprise (Weeks 7-8)

VI. Evaluating the Enterprise (Week 9)

Pathways: The Evolution and New Plan for 1994 and Beyond

The Vocational Integration with Academics Project (VIA)

The Vocational Integration with Academics Project (VIA) of the Cambridge Public Schools is one of eleven programs nationally to receive a grant from the U.S. Department of Education to develop new ways to integrate academic and vocational learning. The information below describes how CRLS teachers can become involved in the VIA Project:

Career Paths

Over a four-year period (Spring 1994-Winter 1998), the VIA Project will create four new, career paths for CRLS juniors and seniors: Health and Human Services; Arts and Communications; Industrial Technologies and Engineering and Business and Entrepreneurship. Within each of these broad paths, students will enroll in coherent sequences of courses that combine the best practices and content of academic and vocational education. The career paths will also offer students opportunities to enter internships and apprenticeships through which they can reinforce and extend their classroom learning and contribute to the revitalization of their community. As a result of participating in the career paths created by VIA, students will be better prepared for future reaming and work.

Design Teams of Teachers

For each path, VIA will establish a multidisciplinary team comprised of a team leader and faculty members drawn from academic and vocational departments at CRLS. It is the job of each design team to develop a series of innovative curricular projects that integrate learning across the academic and vocational courses clustered within the career path and that relate the learning to the needs and resources of Cambridge. Team members will pilot these projects in their existing classes and then use the projects as the basis for new curricular modules and courses.

To enable the design teams to meet regularly and to enable design team members to create finished products, the VIA grant provides for release days and offers stipends for after-school and summer work. The following team leaders will oversee the process of establishing design teams: Albert Newton (Arts & Communications), Martha Bedrosian and Holly Lee (Health & Human Services), Tom Hsu (Industrial Technologies & Engineering) and Jim Delena (Business & Entrepreneurship).

For more information about VIA, contact (349-6717).

Rindge School of Technical Arts, PathWays: School to Work- Career Exploration Program

	Work-based learning	Academic Invigoration & Integration	All Aspects of the Industry	Career Exploration	Project-Based Learning
Business & Entrepreneurs	Job Shadowing School-based Enterprise Community Service Learning Field Trip Series (Smith Barney/Ledge)	Math & English 1st Quarter Research Report	Finance & Management	Research Skills What's Out there/How to use it Speaker Series	PathCo. Business Project, PathWays to Entertainment & Dining 1st Quarter Presentation
Arts & Communications	Job Shadowing School-based Enterprise Community Service Learning Field Trip Series (WGBH/Gutman Media Center)	English & Social Studies 2nd Quarter Research Report	Labor Issues & Planning	Brainstorming Skills/Interests Career Networks Communication/Presentation Speaker Series	Multimedia Production, Hands & Minds Flyer 2nd Quarter Presentations
Industrial Technology & Engineering	Job Shadowing School-based Enterprise Community Service Learning Field Trip Series (US Air/Tsongas Center)	Science & Math 3rd Quarter Research Report	Technical & Production Skills & Underlying Principles of Technology	Resumes & Applications Cover letters Phone Inquiries & Messages Speaker Series	Contraptions, PEET Project: Paths to Energy Efficiency & Technology 3rd Quarter Presentations
Health & Human Services	Job Shadowing School-based Enterprise Community Service Learning Field Trip Series (Mt. Auburn Hospital/ Correctional Institute: Walpole)	Social Studies & Science 4th Quarter Research Report	Community Issues & Health & Safety Issues	Interview Types & Tips Mock Interviews Speaker Series	Cambridge Development Project 4th Quarter Presentations

PATHWAYS

I. Program Purpose/Mission:

The Pathways Program engages students in a process of discovering their career interests and inventing their futures. Participating in a rich combination of classroom and workplace experiences, students develop the knowledge and skills necessary to pursue their interests.

II. Statement of Need:

Because so many teenagers hold part-time or summer jobs, many adults make the erroneous assumption that young people are well-informed about work. Unfortunately, this is not so. Cambridge teenagers, like most urban youth, are generally segregated into youth jobs. And, like their peers in other cities, they live among adults many of whom are underemployed or unemployed. Urban teenagers have few if any opportunities to learn about work, to see its relation to schooling, or to learn about the kinds of skills that various careers require. As a consequence, they become unrealistic about their futures--some become discouraged about ever holding a decent job; others aspire to occupations their academic records cannot support.

Urban teenagers do not see school as providing paths to anywhere they want to or can go. In their eyes, school is a series of meaningless rituals and contrived exercises. Seeing no meaning in what they are being asked to do, they put little effort into their school-work and enter a downward spiral, investing less and less and hence failing to develop to their fullest potential.

III. Goals:

The Pathways Program has been designed to address the needs of urban youth for more work-centered, and hence more motivating learning experiences. Pathways is about helping students feel purposeful and powerful. By offering an experiential curriculum through which each student explores the world of work and expresses his/her own talents, Pathways enables students to carve their own path and to discover meaning in their learning.

The five main goals of Pathways are to:

- Give meaning and focus to classroom learning by connecting it to workplace experiences.
- Develop students' understanding of the connection between schooling and work.
- Bring employers into direct contact with today's schools, giving them important insight into tomorrow's workforce.
- Promote understanding between students and employers of diverse ethnic and economic backgrounds.
- Benefit the future economy by contributing to the professional development of today's students.

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III. Program Activities:

Pathways offers students two distinct but complementary methods of learning: school experiences in which students develop and use academic skills to carry out classroom projects that simulate career demands; and job shadows, in which individual students carry out research on particular careers and then shadow individuals in those careers in the Boston area.

The program is divided into four curricular units or pathways: Business & Entrepreneurship, Industrial Technology & Engineering, Health & Human Services, and Arts & Communications. Within each of these specific pathways, classroom lesson plans combine with workplace visits to provide students with a context and relevance for their learning.

Pathways is bold and intensive in its approach. It commits to placing students in stimulating workplace environments, such as an emergency room at the Brigham and Women's Hospital, the cockpit of a US Air DC-10, and the trading floor of the Boston Stock Exchange.

These out-of-school experiences are complemented by project-based work which takes place in the classroom. For example, students visiting Smith Barney did a study of the interrelationship among stocks, bonds and interest rates which they presented to their classmates, while students shadowing a Cambridge Police Officer enacted a mock trial requiring them to speak publicly, wrestle with their concepts of guilt and innocence, and apply principles of law.

The Pathways Program:

- Rotates students through workplace experiences (job shadows) that give meaning and focus to their classroom learning.
- Teaches students how to obtain reliable and relevant career information.
- Connects students with adults who can help them learn about work, its relation to schooling, and the skills different careers require.
- Engages students in classroom projects that call upon them to relate academic skills to demands of the workplace.
- Involves students in reflecting on the value and meaning of work in their lives.

Pathways Program, Rindge School of Technical Arts: Elements of Job Shadowing

I. Preparation

1) Research the industry
- Telephone: calls to request information and materials
- Library: e.g. Review of Government Documents, journals
- Career Resource Center

2) Research the specific company or organization

3) Generate questions to ask at the shadow

4) Create a transportation plan

5) Confirm the appointment with the contact person

6) Bring in parental permission slip

Product:

Pre-Shadow Report, including information on the industry and the site, questions to ask, and the transportation plan

II. JOB SHADOW

III. Reflection/Writing/Presenting

7) Write impressions of the job shadow experience

8) Write up the interview(s) conducted at the site

9) Analyze/synthesize information (gathered before and during)

10) Write a thank you note to the contact person

Products:

Final Report on the shadow
Oral presentation to the class

Pathways
Business and Entrepreneurship Project:
Running a Class Business

Activities include:

The Cookie Company: A crash course in design, manufacturing, and pricing goods

> Groups of students design ways to decorate cookies provided by the teacher, using available resources (materials and time). Students calculate the costs of manufacturing their designs and determine a selling price. Cookie designs are judged by a culinary arts teacher.

What Have We Got To Offer? Assessing resources available to the class for running a business

> Students list materials and tools, time, space and locations, skills and talents, and help and support from other students, adults, and organizations that will be available to them. They use these lists to brainstorm possible goods and services the class might sell.
>
> (Reading: *The Home-Based Entrepreneur*, "Resource Guide," pp 103-106 and 119-120)

Give the People What They Want: Assessing the needs of the market

> Students brainstorm goods and services that people in the school community might need. Using a sample marketing survey as a guide, groups of students develop needs surveys for teachers, students, and administrators & staff. They conduct the surveys and tabulate the results.
>
> (Software: Pagemaker)
>
> (Reading: *The Home-Based Entrepreneur*, "The Use of Questionnaires," pp 83-84)

Who Are We Up Against? Identifying potential competitors in the market

> Students conduct research to determine what other businesses are already operating within the school community, such as vendors of class rings; yearbooks; snacks, food, and drinks; and school T-shirts, mugs, pennants, and stickers. Methods of research include interviewing administrators and student-government representatives, reviewing advertisements in back issues of school papers, etc.

(Reading: *The Home-Based Entrepreneur*, "Evaluating the Competition," pp 84-85)

What Are We Selling? Choosing a product and a company name

Using the results of the marketing surveys and the lists of resources and competitors, each group chooses one product or service the class could sell. The group prepares a proposal *

(Reading: *The Home-Based Entrepreneur*, "Choosing a Business Name," pp 25-27)

Making Our Product Stand Out

*Pen

(Software: any paint program--ask Bini for recommendations)

Cost Analysis

(Software: Excel or ClarisWorks Spreadsheet)

(Reading: *The Home-Based Entrepreneur*, "Business Viability: Costing/Pricing Your Product or Service," pp 87-94)

Manufacturing

Promo

(Software: Pagemaker; art programs--ask Bini for recommendations)

(Reading: *The Home-Based Entrepreneur*, "Promoting and Advertising a Home-Based Business," pp 95-100)

Keeping Track: Developing and maintaining a record-keeping system

After studying several types of record-keeping systems, the class sets up its own system and determines how, when, and by whom records will be updated.

(Software: Excel or ClarisWorks Spreadsheet)

(Reading: ***, "***," pp **-**)

Sales

How's It Going? What Should We Change? Making mid-course corrections

Groups of students review costs and income and compare them to their earlier predictions. Each group presents to the class an analysis of the health of the company and a proposal of changes to make (if any). The class develops an action plan to improve or maintain the success of the business.

Reflections, Ratings, and Recommendations Summarizing and analyzing the business experience

Individual students present the highlights of the class business experience. They rate the business on several scales, and they recommend changes and enhancements in the program for next year's class.

Name_____

Date_____

Pathways Job-Shadow Reports

First Quarter

Pathways students' Job-Shadow Reports in the first quarter should be at least two pages long, typed and double spaced. They should include the following:

- When did you go on your job shadow?
- What is the name of the company?
- Where is the company?
- What product or service does the company sell, and who are their customers?
- What is the name of the person you shadowed, and what does that person do?
- What skills and training are required for that person's position?
- What is the hierarchy in this company? Is it broken into departments? Who supervises whom?
- How is the company financed? Is it privately owned? Is it public (with stockholders)?
- What is the history of the company?
- What job opportunities exist in this company?
- What did you learn from this job-shadow experience?
- What are your recommendations – what should stay the same about this job-shadow, and what should be different next year?

You may also include any other interesting information about the job shadow.
Each quarter's report will increase in length and focus on different aspects of the industry.

Name_____

Date_____

Pathways Job-Shadow Reports

Second Quarter

Pathways students' Job-Shadow Reports in the second quarter should be at least three pages long, typed and double spaced. They should include the following:

- When did you go on your job shadow?
- What is the name of the company, and where is the company?
- What product or service does the company sell, and who are their customers?
- What is the name of the person you shadowed, and what does that person do?
- What skills and training are required for that person's position?
- What are the company's short-term goals, and how do they plan to reach their goals?
- What are the company's long-term goals, and how do they plan to reach their goals?
- What are the labor issues in this company? Are there unions? Do employees have contracts? What benefits do employees get?
- What is the history of the company?
- What job opportunities exist in this company?
- What did you learn from this job-shadow experience?
- What are your recommendations – what should stay the same about this job-shadow, and what should be different next year?

You may also include any other interesting information about the job shadow, such as management and finance information.
Each quarter's report will increase in length and focus on different aspects of the industry.

Name_____

Date_____

Pathways Job-Shadow Reports

Third Quarter

Pathways students' Job-Shadow Reports in the third quarter should be at least four pages long, typed and double spaced. They should include the following:

- When did you go on your job shadow?
- What is the name of the company, and where is the company?
- What product or service does the company sell, and who are their customers?
- What is the name of the person you shadowed, and what does that person do?
- What kinds of technology does this company use?
- What technical and productions skills do workers need in this company?
- What training is required for workers in this company? What science, math, and technology courses do people in this company need to have taken? (Examples: electronics, chemistry, math, precise measurements, biology, genetics, etc.)
- What is the history of the company?
- What job opportunities exist in this company?
- What did you learn from this job-shadow experience?
- What are your recommendations – what should stay the same about this job-shadow, and what should be different next year?

You may also include any other interesting information about the job shadow, such as management, finance, planning, and labor information. Each quarter's report will increase in length and focus on different aspects of the industry.

Name_____

Date_____

Pathways Job-Shadow Reports

Fourth Quarter

Pathways students' Job-Shadow Reports in the fourth quarter should be at least five pages long, typed and double spaced. They should include the following:

- When did you go on your job shadow?
- What is the name of the company, and where is the company?
- What product or service does the company sell or provide, and who are their customers?
- What is the name of the person you shadowed, and what does that person do?
- What skills and training are required for that person's position?
- How does the company fit into the community? What does it get from the community, and what does it give back?
- What steps does the company take to preserve people's health and safety?
- What is the history of the company?
- What job opportunities exist in this company?
- What did you learn from this job-shadow experience?
- What are your recommendations – what should stay the same about this job-shadow, and what should be different next year?

You may also include any other interesting information about the job shadow, such as management, finance, planning, labor, and technical and production information.

Name_____

Date_____

Pathways Assessing Class Resources

In order to start a class business, you must be realistic about what you can accomplish. For example, no Pathways class will be able to sell virtual-reality systems, even if there were a big market for them at the school. So, in the spaces below, list resources your class has that it could use in designing, producing, promoting, and selling a product or service.

1. materials and tools

2. time (Ask your teacher how much time will be available in class and outside of class)

3. space/location

4. skills and talents (examples: drawing ability, speaking ability, clear writing, building with wood, creativity & imagination, ability to persuade and sell, fashion sense, acting/singing/dancing, etc.)

5. help and support from others (teachers, parents, administrators, friends, volunteers, job-shadow hosts, etc.)

Now, compare your list with your classmates' lists. Brainstorm products and services that you could provide using these resources. Write the ideas on the back of this page.

Name_____

Date_____

Pathways
Assessing Needs

The next step in starting a class business is to identify the people in your market and their needs. You will be selling your products and services to the school community. The people in this community are teachers, students, administrators, and staff members.

1. Below, brainstorm needs you think each category of people have.

Teachers' Needs	Students' Needs	Administrators/Staff Needs

2. Now, divide into three groups to develop survey questionnaires, one for teachers, one for students, and one for administrators and staff members. In your group, share your list of needs with your classmates and make one big list.

3. Read about different types types of survey questions, thinking about what questions you should ask on your survey. In the space below, write out the main points about choosing types of survey questions.

4. In your group, develop a questionnaire for your target market (teachers, students, or staff/administrators). Design the survey so that you will be able to tell which products and services will sell and which will not. Include questions about the prices people would be willing to pay.

Get your questionnaire approved by the teacher.

5. Conduct the survey. Each person in the group is responsible for surveying ten people in the target market.

6. Tabulate the results of the survey. (The teacher will help you figure out how to do this.)

7. Present the results of your survey to the rest of the class.

Name_____

Date_____

Pathways
Choosing a Product and a Company Name

1. Now that you have identified your resources and the needs of your market, decide as a class on one product or service that you will sell. Describe the product or service below.

Congratulations! You're almost in business, but your company needs a name.

2. Read about how to select a name for your company. Write out the main points from the reading that suggest how to select a good name.

3. Divide into the same groups as before and brainstorm some names for the company. List them below.

4. Select the best name and, below, write why you think it is best.

5. Share your name and reason with the class. Now, vote on the best name of all. Remember, the success of your business may depend on having an effective name. So, vote for the best name, not necessarily the one you invented.

The name of your company is _____ .

NOW you're in business!

Name_____

Date_____

Pathways

Product Differentiation

When a company designs a product, they need to think about how to make that product different from what's already on the market (its competitors).

1. Bring one or two kinds of pens to class so that you can analyze what makes each of them unique. You may bring ordinary or unusual pens.

2. Divide into groups and look at the pens you've brought. Think about why people would buy each particular pen. Describe the features of each pen.

Pen A

Pen B

Pen C

Pen D

Pen E

Pen F

Pen G

Pen H

Name_____

Date_____

Pathways Cost Analysis

In order to run a profitable business, you need to know your costs beforehand, in order to determine the selling price – the price you should charge for your product or service. First, do a cost analysis for an example business, and later you can analyze costs for your class business.

1. Read the description of the business on the handout. List all the company's costs, below.

TO BE FILLED IN:

2. (Fixed vs variable costs)

3. (Breakeven analysis)

4. (Add profit & determine price)

3. Which pen is best for someone who wants to buy:

a. the least expensive pen? _____

b. the longest-lasting pen? _____

c. the pen that writes the smoothest? _____

d. the best-looking pen? _____

4. Are there other ways that these pens are unique?

5. Design a new and improved pen. Sketch the pen below and describe its features.

6. Promote your new pen to the class. Be creative! (Use the materials in class to make posters, commercials, packaging, etc.)

Name_____

Date_____

Pathways

Silent Observation

1. Choose a business you would like to study by observing silently.

2. Ask permission of the manager, and schedule a time to observe.

3. Visit the business and spend at least half an hour observing what goes on. Take notes on the following:

- Who works there?
- What skills are needed?
- What kind of equipment and other resources are there?
- What do you observe about the customers?
- What do you think it would be like to be in each role:
  - worker and customer?

4. Then go home and write at least one and one-half pages about your observations.

BEST COPY AVAILABLE

CAREER PATHS INTERNSHIP PROGRAMS

Program Descriptions
1995-1996

Career Pathways Internship Programs

The Program

'The Internship Program has helped me a lot in making decisions about what to do with my life. This program has also given me a feel of what college will be like and I now know that I am ready for it.'

Senior Student
Class of 1994

The purpose of the Career Paths Internship programs is to offer students an opportunity to explore the world of work and to give new focus and meaning to their academic studies. Many of the students who have graduated from these internships believe that the experience helped better prepare them for college and future work roles. In the internships, students carry out important and interesting tasks while working with adult mentors. Students also attend an academic seminar in which they reflect on and extend their learning. There are high expectations in terms of attendance, interpersonal skills and productivity both at the workplace and in the seminar.

The Work site

"You really learn a lot about yourself and what its like to work with other people-as a team."

Junior Student
Class of 1994

At the worksite you are matched with an adult supervisor who will give you specific tasks and projects, and who will support you throughout your work experience. Because it is important that the work experience relate to the academic seminar, both the supervisor and the seminar teacher work closely together. Depending upon which internship program you are in, worksite placements could include local hospitals, Cambridge elementary classrooms, K- 2, Harvard University Facilities Departments,
and several Cambridge banks.

The Seminar

'The seminar is fun because we get to hear how things are going from each other and we get to work on projects. The program is not all fun and games. To be a success in the program, you have to be willing to work really hard'.

Senior Student
Class of 1994

The seminar equips students with the writing, thinking, and teamwork skills necessary for success in the twenty - first century work environment. The interns are expected to keep a daily journal and record either observations from their work experience or specific assignments from the seminar teacher. Reading selections and projects based upon the specific internship are also part of the seminar. The seminar also provides an opportunity for the students to share and reflect upon worksite experiences and bring those observations into a more formal presentation.

The Cambridge-Lesley Careers in Education Program

The Cambridge-Lesley Careers in Education Program is a unique educational partnership, designed to help junior and senior students consider a career in teaching and related fields which involve working with children. The program offers internships in Cambridge's Public School's elementary classrooms while being linked to an education seminar at Lesley College.

The field internship offers experience in working with children, including field observation, one-on-one work, small group work, and independent project development. A typical morning for an intern might include assisting the teacher with group meeting, working with a small group of students on a math project, reading a multi-cultural story to the class and assisting students with their alphabet. Each intern works mainly in one classroom, but gains exposure to other classrooms and educational settings as well.

The seminar at Lesley College, co-taught by a Cambridge Rindge and Latin teacher and a Lesley College professor, includes observation exercises, team building, journal keeping, personal writing, selected readings, student projects, and visiting speakers who work in the field of education. Interns document their experience in the program by preparing projects and presentations about their work.

Daily Schedule

Monday, Wednesday and Friday - students attend the educational seminar held at Lesley College from 8:15 until 10:45.

Tuesday and Thursday, students spend from 8:00 to 10:45 at their elementary sites. (Some students may start before 8:15 depending on the starting time of their assigned elementary school.)

Academic Credit

Interns receive full credit for English, Social Studies, and Technical Studies

The program offers 40 credits per year, as follows:

- English - 10 credits
- Social Studies - 10 credits
- Tech. Internship - 20 credits

Harvard University Operations Program

The Harvard University Operations Services is accepting approximately twelve high school students for internship positions for September of '95. The University Operations Services is a group of various departments which provide essential services to Harvard's many schools such as the Law School, Business School, Education School etc. As a Harvard University intern you might be placed in one of the following departments:

MIS Support Services : The intern has the opportunity to experience administrative functions and be a team member for a department that is involved with computer network and data base systems for the university.Specific duties include: database management, data entry, loading software, working the "Help Line"

Transportation Services: Do you have experience working with cars or auto mechanics? Then this is the internship for you! The internship includes daily maintenance of all Harvard Shuttle and Harvard Security vehicles. Specific responsibilities include changing oil filters, inventory management, troubleshooting maintenance problems and fueling vehicles. In addition, RSTA and Harvard are working together next year in the conversion of standard vehicles to electric power. This could be an exciting opportunity to learn about alternative methods of transportation.

UOS Control Center: This unit is responsible for the dispatch of emergency repair calls within the University. The placement offers the student a real look at various communications systems. Specific responsibilities include: dispatch calls to plumbers, electricians,emergency response/notification to local fire and police groups. The student will also learn data base and data entry skills.

Environmental Health and Safety Group: This placement offers a student an exciting and customer oriented placement that provides environmental and occupational health and safety expertise to the University community. Responsibilities include: Using a variety of computer applications in order to support a complex, multi service organization. Student will also gain first hand experience with fire and safety compliance at the University.

Building Operations and Maintenance: This placement will pair the student with a variety of members who perform daily maintenance on the University buildings. Experiences include HVAC, plumbing and locksmith services.
Specific Responsibilities: cutting and delivery of keys, cleaning filters, lamping and meter readings.

Administrative Services Group: This unit provides support to all of the Administrative Departments in University Operations. Prior work in a professional office setting helpful but not required. Candidates should have an interest in communication, organizational, basic computer skills.
Responsibilities include: answering and screening calls, scheduling meetings, creating and maintaining files, organizing meeting space.

Harvard Dining Services: Interested in learning all aspects of what is involved with running a real full service dining room? Learn how food is ordered, menus are planned, staff is hired, special events are scheduled and catered, purchase orders and requisitions are handled all in the fast paced world of food services. Specific Responsibilities include: Basic organizational skills, data entry for requisitions, ability to move through a number of food service stations.

Academic Credit and Pay
Academic Credit 40 Credits

English	10 Credits
Social Studies	10 credits
Internship	20 credits

Daily Schedule in 1994-1995(may change in '95-'96)
8:00-9:00 Seminar 2 or 3 days per week
8:00-9:00 Work site on alternate days

Financial Services Internship Program

Beginning in September of 1995, the Rindge School of Technical Arts with the support of the Citywide Youth Employment Office, will sponsor a Financial Services internship program open to twelve to fifteen Cambridge Rindge & Latin high school students. The objective of this pilot program is to provide experience to students who are currently considering banking and related fields as a career, and to integrate their real work experience with academic subjects.

The Program
Students will work (in pairs) at local banks and participate in a related CRLS seminar. In the seminar, students will have the opportunity to learn from each other as well as from professionals within the banking community. The seminar will also expose students to all aspects of the banking industry. Curriculum will be developed cooperatively with the school, community and banking partners. Students will keep daily journals recording worksite experiences. Readings and writing selections will be based around the theme of work and banking. Some of the following banks invited to participate include: Bay Bank, Cambridge Portuguese Credit Union, Cambridge Savings Bank, Cambridge Trust, Cambridgeport Bank, East Cambridge Savings Bank, North Cambridge Cooperative Bank, US Trust, and Wainwright Bank.

Credit

English	10 Credits
Social Studies	10 Credits
Internship	20 Credits

Daily Schedule
Students will spend half of each school day in the internship program. The current design of the program is that students would spend part of several mornings attending the seminar and part of each day working in the bank.

Internship Positions
It is the goal of the program to offer as many diverse positions as possible. We are looking for students who are either thinking about a career in banking, business, or financial services to apply.

For more information
please contact: Maria Ferri
Mailbox located in RSTA Office
349-6730

HEALTH CAREERS PATHWAYS PROGRAM

The Health Careers Pathways Program is a unique combination of classroom, community and work-based learning experiences. Through this program, students develop their understanding of scientific concepts and procedures, and apply and enhance this learning through job-shadowing, after-school jobs and internships in local health care institutions. Students are also matched with volunteer mentors in the health care field who provide career guidance and support.

THE PROGRAM

The first year of the Health Careers Pathways Program consists of the following:

- an Anatomy and Physiology course, which introduces students to the study of the human body;
- Health Careers course, which introduces students to the many careers available in health care and to the occupational knowledge of the medical professionals, includes job-readiness preparation. The Health Careers course employs active learning and includes discussion groups, rotations at hospitals, seminars, projects, guest speakers and journal writing on medical topics;
- extended job-shadowing in a medical specialty of their preference, on-site at a hospital once a week;
- paid after-school jobs at area health care institutions. Both the job-shadowing and after-school job placements allow students to put their classroom knowledge to work in dealing with patients, hospital staff, and medical issues.
- students keep a portfolio of their work, and culminate the year in a project which will be presented at a workshop open to hospital and CRLS staff, parents, and fellow students.

The second year of the program consists of the following:

- participation in a paid internship four days a week at a local health care institution, in a field of their choice. This internship may be attended after-school or during the school day;
- attendance at a Health Careers seminar taught after-school one day a week;
- students are also strongly encouraged to take related courses. The associated course for the 1995-1995 school year for second year students is an English course, the The Literature of Health and Disease.

A TYPICAL DAY IN YEAR ONE

In the morning, students attend the Anatomy and Physiology class, where they study a various systems of the body. This study is accomplished through classroom discussion, speakers, student presentations, lectures, labs and field trips. Students are encouraged to relate the academic topic to knowledge gained from their on-site work experience.

In the afternoon, students attend the Health Careers class, where they participate in a career exploration activity. For example, students might conduct self-evaluations to determine what career would be best for them, then the group would brainstorm and do research to further expand their career options. The class ends with a 15 minute journal writing session.

After school, the students go to their after-school job. At the worksite, they are training for increased responsibility in their chosen field, and are given opportunities for interaction with patients and staff.

OTHER PROGRAM ACTIVITIES

Students in the program participate in additional activities, including:

- monthly "management meetings" with the Health Careers Program Coordinator during which time students present their work experiences, challenges and successes for consideration and discussion with the group;
- a weekly study group;
- a mentoring program with individuals in the health professions;
- writing and producing the Health Careers Newsletter, which is sent to area health care institutions.

HIGH SCHOOL CREDIT

Credit for the Health Careers Pathways Program is as follows:

Year One:

Anatomy and Physiology:	10 Science credits
Health Careers:	10 Technical Credits

*Year Two:

Literature of Health and Disease:	5 English Credits

* The second year will also have a seminar taught in conjunction with the internships.

DESKTOP PUBLISHING CURRICULUM

The wide acceptance and use of desktop publishing in today's workplace has created the need for students to acquire the basic desktop publishing skills. I feel that we have a non-reading student population; therefore, we have a non-writing population. Students mainly express themselves verbally, but in a school setting we want them to express themselves in writing and they have difficulty doing that. Students have shown an interest in using computers. I have capitalized on their interest in computer technology and provided a comfortable setting for expressing themselves by creating written materials using desktop publishing. The written materials are entertaining as well as educational, so students are not intimidated by the written word, because they understand and feel comfortable with the process.

They create publications for the preschool and elementary school age audience, such as wordsearch puzzles, vocabulary workbooks, coloring books, and calendars. In the publications that they create, they are providing the younger audience with a tool to appreciate reading.

The projects that are created integrates technology and academic learning. The student first learns computer technology via understanding the components of a computer system, how to manipulate information on the computer, and learning specific software applications. After mastering the computer technology, they focus on different aspects of academics, such as language arts, to produce the wordsearch puzzles and vocabulary books in Spanish, French and English.

A summary of the projects and objectives follows.

- Coloring Books — Target audience age: 4-6

  Students will create coloring books. They will select the theme for the coloring book. In selecting the topic, students have to do research at the library and write a report. They then utilize the information they have ascertained and communicate it to the target audience using images and text.

- Flash Cards — Target audience age: 6-7
  - Vocabulary

    Students will create vocabulary flash cards in Spanish, French, and Portuguese. Students will use a bilingual dictionary to translate vocabulary words according to grade level.

  - Math

    Students will create addition and subtraction flash cards. Students will research math books for appropriate grade level to develop math problems.

- Vocabulary Workbooks — Target audience age: 6-7

  Students will create a vocabulary workbook. They will select a theme for workbook. In selecting topic, students have to do research at the library, talking to individuals, and come up with words and definitions in relationship to their theme. They then utilize the information they have ascertained and communicate it to the target audience using images and text.

- Wordsearch Puzzles — Target audience age: 9-adult
  - Bilingual

    Students will create bilingual wordsearch puzzles that will help the target audience to learn English. The puzzles will be in Spanish, French, and Portuguese. The puzzle's word list will be in one of the native language: Spanish, French, or Portuguese. The puzzle part will be in English. Students will use a bilingual dictionary to translate vocabulary words according to target audience.

  - African-American & Hispanic-American History

    American History does not educate us about non-Europeans accomplishments and contributions to society. I feel it is important that people learn about African-Americans and Hispanic-Americans accomplishments and contributions. The students will take possession of material that has been hidden.Students will create and African-American and Hispanic-American wordsearch puzzles. They will select the puzzle theme, do research, write a two-page report, and select a minimum of ten key words from the information they compiled to use in the puzzle.

- Personalized Calendars — Target audience: students enrolled in my class

  Students will create a personal calendar. They select the theme for the calendar, e.g. sports, family events, hobbies, etc. They will scan in images to generate the picture pages for the calendar, manipulate the images, and include text. They will use a calendar creator for the month pages and insert dates that are important to them. They will also create a cover page. Students learn about each other's interests and cultures, e.g. Chinese art, Caribbean Islands photos, family portraits from Puerto Rico.

The goals I hope the students will achieve are feeling confident with computer technology, increase proficiency in reading and writing, and developing creativity through identifying and reading new resource materials. I will consult with History, English, ESL, and Math teachers. I will inform them of the types of projects my students will be creating and ask their advice about research methods and resources. I will also ask them to be a resource for my students.

I have observed that students require a practical approach to learning. To empower them, I have developed a curriculum that focuses on using computer technology and various desktop publishing techniques to tap into the real world of publishing. Students will be publishing materials for an appreciative audience of young children and adults. I will describe below the process to create a vocabulary workbook and a bilingual wordsearch puzzle.

Each student will create a vocabulary workbook with a minimum of 20 pages. The workbook will be for first and second graders. The workbook will consist of words, their definition, and their picture. For example, a page could consist of the word apple, it's definition, and a picture of an apple. After every three pages a worksheet will instruct the user to match the words with its picture. The students will select a theme for the workbook. They will do research at the library; i.e. reading children books, to select appropriate words for the target audience. They will use a children's dictionary for definitions. After completing their research, they will create their workbook pages and use desktop publishing to design the workbook. The students will create a cover for the workbook. The cover and pages will be binded into a workbook. The workbooks will be presented to hospitalized children for Christmas.

The class will create three bilingual wordsearch puzzle books. Each book will have 20 pages. The books will be in Spanish, French, and Portuguese. The books will be designed for ages 9 to adult. I will ask an ESL teacher to discuss with my class the required vocabulary for an ESL learner. My students will then develop a list 200 words. The list will be divided equally among the students. Each student will use bilingual dictionaries to translate the words into the appropriate languages. They will create wordsearch puzzle pages; the word list will be in one of the native language (French, Portuguese, or Spanish) and the puzzle will be in English. They will then use desktop publishing to design the wordsearch puzzle. A cover page will be created for each language. After

all the puzzle sheets have been print, they will be sorted by language. The pages and cover will be binded into a book. The books will help the target audience learn English. The books will be given to elementary, secondary, and adult ESL programs

Classroom publishing involves critical thinking, writing, and cooperative learning. The product is something of value that is recognized and appreciated by their audience. The students are proud of their work.

South Division High School

SWIS Objectives

WORKING DRAFT-Feb. 1992

OBJECTIVES FOR HOSPITALITY CAREER SPECIALTY

1. Widen horizons of students. Global Implications
2. To prepare students for ongoing change in the work world.
3. Integrate academic and hospitality curriculum.
4. Utilization and application of academic skills in hospitality specialty classes. (see Project Saves objectives)
5. To experience success on the job.
6. To develop personal and professional living skills.
7. To provide the opportunity for critical thinking skills.
8. To develop self-actualization and self esteem.
9. To provide opportunity for the development of leadership skills.
10. Students will project anti-racist, anti-biased attitudes through their participation in a multi-lingual, multi-ethnic, culturally diverse curriculum.
11. To provide "hands on" experience utilizing technical knowledge, skills, and equipment.
12. Integrate industry and community resources in the classroom experience.
13. To expose students to past, present and future technology as it relates to the hospitality industry.
14. To become aware of the necessity and advantages of life long learning.

This set of objectives is to be reviewed by members of the Food Service and Travel and Tourism advisory boards, and academic and curriculum specialists before finalization.

Developed by:
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An AAI Framework

HOSPITALITY MANAGEMENT
AAI

Integrated Plans

SWIS
Summer Integrated Work Plans

SCHOOL South Division High School PROGRAM AREA Hosp. Management Level I

Objective or Activity	Timeline	Person(s) Responsible for Implementation	Coordination With
Introduction to Hospitality Management	2 Days	Team	All Courses in Program
Intro to Geographic Component-Relationships with - Foods - Travel - Recreation - Health - Math - English	1 Week - 1/12 weeks	Balwinski, Kollath	Library: Research-Skills Reading: Vocabulary Development
Map Skills, How to Read Latitude, Longitude Scale Making Maps	1 Week	Balwinski, Joy and English Teachers	A.V. Materials and Report Writing
Introduction to Anglo America and Study of the Region	4 Weeks to 6 Weeks	Balwinski, Kollath, Joy, Eskuche, Kasper	Library, and other team members Tour Development
Latin America Mexico Central America Caribbean South America	4 -5 Weeks	Balwinski and Team	Report - Travel Brochure Food Project (Mexican, Puerto Rico)

SWIS
Summer Integrated Work Plans

SCHOOL South Division High School **PROGRAM AREA** Hosp. Management Level I

Objective or Activity	Timeline	Person(s) Responsible for Implementation	Coordination With
South Asia South East Asia Nations, Foods, Religion	3 Weeks	Balwinski, Kollath, Eskuche, Joy English, Rec.	Research Hindu Bhudism Moslem Silk & Tea Industry Moontair Climbing
East Asia China, Hong Kong Japan Korea, Taiwan Singapore Philippines	3-4 Weeks	Balwinski, Kollath, Eskuche, English, Rec.	Great Wall Cantonese, Peking - Cooking Hong Kong - Colonialism Shinto Sumo Wrestling Pearl Raising
Australian, New Zealand and Oceanin	3 Weeks	Balwinski and Team	Barrier Reef, Out Back VCR - Drought- Natl Geog. Tour - Sidney and The Great Tea & Sugar (Ind. & Pacific)
Exam Semester 2	1 Week	Balwinski and Team	Prepare from Sem 2 Countries

SWIS
Summer Integrated Work Plans

SCHOOL South Division High School PROGRAM AREA Hosp. Management Level I

Objective or Activity	Timeline	Person(s) Responsible for Implementation	Coordination With
European Region Continental Island Mediterranean Scandinavian	4 Weeks	Balwinski, Kollath	Rest of Team Tour Development Foods Recreation Letter (Germany, France, England) E. European
Exam	Covers 1st Semester 1 Week	Balwinski,	
Mid-East North Africa	3 to 4 Weeks	Balwinski, Bartholeomew Kollath, Eskuche English	Recreation: Camel Races Egypt & Israel Holy Land Research: Islamic Judaism Christian Impact on Life
Sub-Africa	3-4 Weeks	Balwinski and Team	Recreation Safari: Plan Distances Accommodations

Aspects

Management

- Issue of the way that education is managed as being in transition from the traditional top-down structure to the TQM model.
- Conveying the challenges to overcome within the structure of schools—i.e., common planning time, isolation of teachers from one another
- School-based management—site-ownership and top-down decision making

Labor Issues

- lack of participatory management
- isolation
- budget driven
- rewards for mediocrity—not enough rewards for quality
- avoidance of real issues—on the part of management

Technical and Production Skills

- communication and people skills (counseling skills)
- Time management skills
- Flexibility and adaptability
- computer competency
- academic/thinking skills (creativity)
- multiple aspects of delivery of information

Community Issues

- perception of the role of the school within society
- parental involvement
- business—bottom-line, quality worker
- community involvement in school
- teacher and student as part of the community
- issues of providing day care
- students should be active in the community as opposed to being separated from it
- what is the community's role as an overarching question?
- the history of the whole village taking responsibility of every child's education

Planning

- looking at trends in planning, i.e., where is health care going?
- establishing goals and outcomes of the planning process
- collaborative effort for incorporating various perspectives
- needs assessment
- developing a structure for the industry of education and for the school
- how to plan around the issues of mandates and state laws

Pennsylvania Youth Apprenticeship Program

History of Curriculum Development

- **Youth Apprenticeship Competencies**
- **Stakeholder Committee**
- **General Content Area Descriptions**

YOUTH APPRENTICESHIP COMPETENCIES

I. JOB READINESS SKILLS

A. Work Ethic -- Measures of a student's work ethic should provide information on a student's understanding and ability to:

Arrive at work and school on time everyday and adhere to the required schedule

Care for one's physical and emotional well-being; avoid self-destructive behavior

Adhere to work place and community norms and to the written and unwritten dress code and grooming standards of the work environment

Accept social and work place norms of conduct and customs and adhere to these behavior standards of the work place and community environments

Alter behavior, adjust plans or reallocate resources in response to changes in task requirements to meet the goals of the organization; perform multiple tasks, analyze, and deal with a variety of options

Do more than the minimum requirements of a task; take on additional responsibilities

Do the best possible job in all work produced

Accept, learn about, and work with the unique qualities of all individuals

Accept the responsibility to enhance the current standards of life within the community

Make decisions and act upon the principled values of right and wrong

Control physical and emotional states of conflict in order to interact effectively with others

B. Communications Skills -- Measures of a student's competence in communication should provide information on the student's understanding and ability to:

Comprehend oral information and accurately assess it for content, context, and emotional meaning. Be able to plan a course of action or to follow directions from information received

Clearly express ideas, emotions, or facts orally

Comprehend written text that can then be used to follow directions, address issues, or solve problems

Communicate, in writing, ideas and information through analysis, conceptualization, synthesis and distillation of information, and articulate points and proposals clearly and succinctly

Judge the underlying meaning of language through observing physical reactions

C. **Planning Skills -- Measures of student competence in planning should provide information on student understanding of and ability to:**

Identify goals and objectives for the industry and for an enterprise within that industry

Plan activities to meet goals and objectives

Perform research relevant to an industry and relevant to developing and operating an enterprise, including acquiring, evaluating the relevance and accuracy of and assimilating information and performing needs assessments

Identify and understand the laws and regulations relevant to the industry (environmental restrictions, labor laws, marketing restrictions, anti-trust laws) and to operating an enterprise (zoning and building permits, incorporation regulations, insurance requirements, tax law)

Form and work in planning groups

Make a timeline

Make a flow chart

D. **Management Skills -- Measure of student competence in management should provide information on student understanding of and ability to:**

Understand different forms of management and ownership within the industry, including partnerships, Boards of Directors, and worker ownership

Allocate resources - time, money, material and facility resources, and human resources

Identify industry-wide and enterprise-wide needs, such as training, research, capital development, or resource development needs

Delegate responsibilities

Assess the performance of individuals and of systems and provide feedback

Provide training

Work with a culturally diverse workforce and community

E. **Technology Issues -- Measures should provide information on students' experience in and understanding of:**

The principles underlying the technologies utilized by the industry, such as the chemical and physical processes involved and capacity and limitations of the technology

The basic organization and structure of computers and of programs

The software used in the industry

F. **Health and Safety Skills -- Measures of student competence in health and safety issues should provide information on student experience in and understanding of:**

Health and safety risks involved in working in the industry -- the dangers associated with various machines and the short-term and long-term effects of exposure to and contact with the materials used

Safe practices in using equipment and handling materials

II. UNDERSTANDING THE WORLD OF WORK

A. **Finance Issues -- Measures of student competence in finance should provide information on student understanding of and ability to:**

Allocate money within the enterprise -- use and prepare budgets, including making cost and revenue forecasts, keeping detailed records to track budget performance, and making decisions on appropriate adjustments, either in forecasts or in spending

Account for revenue and expenditures within the enterprise

Understand financing of enterprises within the industry -- individual and bank loans, private and public stock, bonds, and other capital agreements, including how to obtain financing with each, what the advantages and disadvantages of each are in terms of stability, control distribution, interest or dividend payments

B. **Labor Issues -- Measures of understanding and experience in labor issues should provide information on student ability to:**

Read and understand employment contracts and identify key elements of contracts

Understand the labor history of the industry and know what unions exist, who their membership is, how they are structured, and what their current goals and activities are

Know the labor rights guaranteed by law, and understand the history and dynamics of collective bargaining and be able to articulate goals, strategies, and arguments in role-playing sessions

C. **Community Issues -- Measures of understanding and experience in community issues should provide information on student ability to:**

Use resources effectively -- to analyze the resources, including raw materials and labor, used by the industry and by an enterprise within the industry; identify the impact of that resource use on the community,

Understand industrial processes; explain how manufacturing processes affect the community and the environment

Understand product or service impact -- explain the impact of the product or service on the community: who the client/customers of the industry are, why they buy the product or service, including the need met by the product or service and marketing practices; how clients/customers pay for the product or service, and what other needs are created or related to it

D. **Environmental Issues -- Measures of understanding and experience in environmental issues should provide information on student experience in and understanding of:**

The effects, short- and long-term, of products or services on the environment, as well as the effects of waste produced by the industry, including throw-away packaging

Environmentally appropriate methods of disposing of or dealing with industrial waste and by-products

III. OCCUPATIONAL SKILLS

A. **Basic Technical and Production Skills -- Measures of student competence in technical and production skills should provide information on student experience in and understanding of the basic technical skills of:**

Blueprint reading

Precision measurements: hand and mechanical

Drawing: hand and CAD

Programming: the writing of simple programs and modification of software to meet specific needs

Adherence to quality control standards

Designing and using a systems flow chart

B. **Occupation Specific Skills**

(To be developed collaboratively based on recognized competencies within each industry.)

THE PITTSBURGH YOUTH APPRENTICESHIP PROGRAM
DEVELOPMENT OF A STAKEHOLDERS COMMITTEE

Background

On September 16, 1993, various school personnel, employers and state and local staff of the Pittsburgh Youth Apprenticeship Program met to discuss the recently completed evaluation of the Pittsburgh Youth Apprenticeship Program and to make recommendations regarding the program's future direction. The establishment of a local governance structure for the program was determined to be a high priority. The following action step was recommended: to establish a sense of community and program ownership among the stakeholders in the Pittsburgh Youth Apprenticeship program by instituting a local Stakeholders Committee to give guidance, direction and operational oversight to the program operating at Peabody High School and to contribute to the Regional Stakeholders' efforts to expand youth apprenticeship as a career education strategy in western Pennsylvania.

Purpose and Goals

The Stakeholder Committee will function within the context of the Parent/School/Community Council structure for Peabody High School.

It will be the local advisory committee to the Peabody Youth Apprenticeship Program. The committee and its members will be responsible for directing and managing the development and implementation of the Youth Apprenticeship Program at Peabody. The primary responsibilities of the group will be:

1. To commit the local community, businesses and educational institutions to support the Peabody Youth Apprenticeship Program.

2. To oversee the development of the Peabody Youth Apprenticeship Program and to ensure that the local program goals, needs and concerns are met.

3. To continually monitor and evaluate the progress of the Peabody Youth Apprenticeship Program.

4. To work with the Regional Stakeholders Board to design and implement a strategic plan for youth apprenticeship in the southwestern Pennsylvania region.

5. To work with the planned district-wide career development team in order to plan and coordinate district-wide policies and programs for school-to-work transition.

Membership

Suggested membership includes representation from the Pittsburgh Board of Education, central office administration, the school site, post-secondary education, employers, parents, community and labor. A majority of the members should be employers and an employer should chair the committee.

TECHNOLOGY DEVELOPMENT
AND EDUCATION CORPORATION

November 23, 1993

Dr. J. Mack Kingsmore
President
Community College of Allegheny County
800 Allegheny Avenue
Pittsburgh, PA 15233

Dear Mack:

As you know from our recent conversations, we are simultaneously restructuring the Youth Apprenticeship Regional Stakeholders' Board and establishing for the first time a local Stakeholders' Committee to oversee the functioning of the Pittsburgh Public School program. While it is very important for us to have your personal involvement at the regional level, it is obviously also important to the Pittsburgh Public Schools' program to have the direct input of CCAC in their program planning. Therefore, I am asking that a CCAC representative be appointed to work specifically in partnership with the Pittsburgh Public Schools to guide and direct the program at Peabody High School.

I've enclosed for your review the document which outlines the purpose and goals of the Pittsburgh Stakeholders' Board. This document has been reviewed by Mrs. Brennen, Fred Monaco, Phil Parr, the Peabody administration and the teaching team. The first meeting of this new committee is scheduled for December 15 from 3:00 to 5:00 PM at the University Club. Invitation letters will be mailed in about a week. I will call you after Thanksgiving to discuss possible CCAC representation with you and to answer any questions you might have.

Thank you very much for your on-going support of the Youth Apprenticeship Program.

Sincerely,

Jeanne B. Berdik
Regional Manager
Pennsylvania Youth Apprenticeship Program

Enclosures

4516 Henry Street
Pittsburgh PA 15213

(412) 687-0200
FAX (412) 687-5222

PENNSYLVANIA YOUTH APPRENTICESHIP PROGRAM

Meeting on the Evaluation of the Pittsburgh Public Schools Program

September 16, 1993

The meeting was called to order at 9:30 am at the Pittsburgh Athletic Association. Those in attendance included: Peter Benzing, Jeanne Berdik, Ray Christman, Robert Flaus, Jane Zachary Gargaro, Tom Jennison, Allan Jones, Judi Malec DiGioia, Rick Miller, Mark Onuocheck, Dave Pacolay, Vernon Phillips, Claudia Vuick, Dennis Wilson and Jean Wolfe.

The purpose of the meeting was to discuss the findings of the Penn State evaluation team as presented in the evaluation document and to develop an action plan for the Pittsburgh program.

The discussion was structured to identify weaknesses/challenges in the current program and opportunities for improvement. Following is a summary of that discussion.

CHALLENGES

1. Caliber, awareness and experience level of students entering the program. Program as currently designed is forced to start too much from scratch.

2. Lack of continuous career development system.

3. Student lack of work ethic.

4. Lack of awareness or understanding of the YAP by school personnel not directly involved.

5. Lack of firm, clear structure which defines roles, responsibilities and expectations.

6. Failure to identify or build-in incentives for all parties -- employers, school, students.

7. Size and complexity of the Pittsburgh schools.

8. Narrow scope of the current pilot program.

9. Identification of very ambitious outcomes for the program given the above challenges.

OPPORTUNITIES

1. Timing is right to strengthen the YAP due to the school district's involvement in restructuring and the state's passage of new Outcome Based Education requirements.

2. The opportunity exists either to redefine the program to accomodate the status quo OR keep the original ambitious vision and restructure the program, e.g. build in some componenta at the ninth grade level.

3. Must redefine and firm-up the structure; must clarify the commitment and expectations of employers, schools, students, parents, labor and post-secondary institutions.

4. Must articulate and communicate this vision and these expectations more clearly and broadly.

5. Must create a partnership with the whole school district not just teachers at Peabody; Board of Education should be brought in as an active partner.

6. School-To-Work Opportunities Act recently introduced in Congress (summary attached) establishes an ideal context for strengthening the YAP.

7. Much has been learned from Year I and there is significant consensus on what can be done to improve.

8. Program decision-making needs to involve local stakeholders.

9. Marketing and incentives which bring in larger numbers of students will force the creation of internal structural change in the program and in the schools.

10. Conversations should be begun with potentially interested industries/career clusters about the possibility of expanding YAP to additional focus areas.

RECOMMENDATIONS

1. Establish vision and goals for the Pittsburgh program.

2. Develop and begin intensive marketing program defining the YAP current focus as a pre-mechanical engineering program.

3. Establish local governance structure for the Pittsburgh program; include the Board of Education, central office administration, school principal and teachers, post-secondary education, industry, parents/community, and labor. This group should be chaired by a representative from industry.

4. Strengthen the relationship with post-secondary education by enacting articulaton agreements and by creating partnerships for student experience with institutions whose focus is engineering.

5. Develop standards for student admission into the program. Program vision and standards need to be compatible. Opportunity should exist, however, for a variety of levels of student experience.

6. Develop and conduct comprehensive awareness and staff development programs on the career development of students and school-to-work transition for school administrators, teachers and counselors in addition to those directly involved in the program.

7. Define a common core of competencies which students are expected to master.

ACTION STEP

Establish a sense of community and program ownership among the stakeholders in the Pittsburgh Youth Apprenticeship Program by instituting a local Stakeholders Committee to give guidance, direction and operational oversight to the Pittsburgh program and to contribute to the Regional Stakeholders' efforts to expand Youth Apprenticeship as a career education strategy in Western Pennsylvania.

PENNSYLVANIA YOUTH APPRENTICESHIP PROGRAM

ACADEMIC CURRICULUM

GENERAL CONTENT AREA DESCRIPTIONS

PROPOSED STUDENT LEARNING OUTCOMES

1992-1993 SCHOOL YEAR

General Content Area Descriptions

The Literate Worker

This course is designed to be as flexible as possible. Although it incorporates a survey of American Literature along with work-related writing assignments, no specific text or readings have been required. Therefore, the English teacher can use an available anthology and supplemental texts to design the reading components at a minimal cost to the school. If texts are to be purchased, the Norton Introduction to Literature contains sufficient material, is flexible, and could be used for the senior year as well.

Readings should range from Puritan to contemporary works, should include all genres, and should be chosen with the theme of work in mind. Suggested readings which follow each unit are commonly found in secondary anthologies and illustrate the work theme. The units are arranged by genre, and can therefore be thematic, but it would certainly be possible to combine approaches and teach a period through a genre.

Social Studies in the World of Work

The focus of the curriculum must be to meet the needs of the student at the workplace. To facilitate this, effort has been made to produce as flexible a document as possible. Topics in American history have been chosen to enable the student to become familiar with major themes and persons of importance. Each topic has suggestions for activities that will give the students practice with skills that are pertinent to their employment, such as: the ability to communicate information, ask for assistance, follow directions, take constructive criticism which may include negative feedback, retrieve information, and deal with problems such as an angry co-worker, and recognize the feelings of others. Suggestions made should not limit the range of possibilities for the teacher nor the students, for much of what transpires in the classroom and is discussed in The Craft Apprentice relates to work experiences; thus, there is ample opportunity for structuring activities around them.

Forces at Work

This course is designed to be a creative and flexible approach using math and science as problems solving tools. It will combine physics, math and machine

tool technology in realistic applications. The very nature of workbased learning provides a transitional base necessary for applying mathematical and scientific procedures in a practical context. The principles taught in this course will be investigated and applied in the actual performance of work-related tasks. "Forces at Work" will provide students with the opportunity to investigate and learn traditional math and physics concepts in a new way. Through a series of activities, students will design, build and operate devices that will encourage further investigations. For example, students will be able to predict and describe the cause and effect of motion by observing the behavior of self-made vehicles as well as machinery at work. Students will have the opportunity to conceptualize science and apply math skills in the work environment through hands-on experience.

Interactive Growth of the Smart Worker in Machine Trades

This instructional program prepares individuals to become employable in a variety of metalworking occupations. This component will stress the development of the understanding of the technology of manufacturing. Instruction includes setting up and operating machine tools; metal fabricating, forming, and cutting machines; assembling of metal products and structures; practices related to ferrous and nonferrous foundries; welding and cutting processes. Instruction is also provided in the use of hand and portable power tools, the physical properties of materials, and other related instruction and skills associated with metalworking occupations. Metals are cast, formed, shaped, molded, heat treated, cut, twisted, pressed, fused, stamped, or otherwise worked upon. However, the main thrust of the program is the development of the students' ability to blend academic training in mathematics, science, English and social studies into the world of work to produce a smart worker.

Proposed Student Learning Outcomes

The Pennsylvania Youth Apprenticeship Program strives to meet students' needs and provide for their success. The curriculum, which is multi-disciplinary, project-driven and work-based, supports and is intended to match the proposed Chapter 5 Student Learning Outcomes, thus promoting statewide acceptance and satisfying local school districts who will participate in PYAP.

As required by 22 PA. Code Chapter 5, paragraph 5.203(c)(5), the curriculum indicates an assessment plan designed to determine the degree to which student learning outcomes are achieved by the student. The student learning outcomes listed below, are referenced within the assessment plans as 1(A); 2(B) etc.

(1) Communications

All students will:

(A) Use effective research skills in school projects including locating sources of information with traditional and emerging library technologies.

(B) Obtain meaning from a variety of complex texts (including essays, novels, stories, poems, technical documents) and identify the writer's purpose or theme, the structure of the text and devices and language used to achieve the purpose.

(C) Produce, for each cognitive area of study, appropriate forms of writing (including stories, poems, descriptive and persuasive essays, research papers, technical reports) that meet established standards for those forms.

(D) Examine and make critical judgments about all forms of communication, separating fact from opinion, recognizing propaganda, stereotypes and statements of bias, recognizing inconsistencies and judging the validity of evidence in persuasive language.

(E) Engage critically and constructively in oral exchanges of information, including understanding and giving spoken instructions, asking and answering questions correctly and using language to achieve effective group communication.

(F) Obtain meaning from complex oral messages and identify the speakers' purpose, the structure of the message and devices and language used to achieve the purpose.

(G) Compose and make oral presentations for each cognitive area of study that are designed to persuade, inform or describe and that meet established standards of quality.

(2) Mathematics

All students will:

(A) Use numbers, number systems and equivalent forms (including numbers, words, objects and graphics) to represent theoretical and practical situations.

(B) Compute, measure and estimate, using appropriate tools, including modern technology such as calculators and computers, to solve theoretical and practical problems.

(C) Apply the concepts of patterns, functions and relations to mathematical reasoning and problem solving.

(D) Formulate and solve problems and explain, orally and in writing, the mathematical processes used and the reasons for using them.

(E) Understand and apply basic concepts from algebra, geometry, probability and statistics and trigonometry to theoretical and practical situations.

(F) Evaluate and draw inferences from charts, tables and graphs, showing the relationships between data and real-world situations.

(G) Make decisions based upon the collection, organization, analysis and interpretation of statistical data and predictions of outcomes based upon the application of probability.

(3) Science and Technology

All students will:

(A) Explain how scientific principles of chemical, physical and biological phenomena have developed and relate them to real-world situations.

(B) Develop and apply skills of observation, data collections, analysis, pattern recognition and scientific reasoning in developing an understanding of physical, chemical, biological and earth sciences and in conducting scientific experiments.

(C) Explore the use and describe the impact of major technologies in economic and civic life.

(D) Explore and describe how modern technologies have developed from and now influence scientific developments.

(E) Construct and evaluate systems using models to explain or predict outcomes.

(F) Generate hypotheses about scientific phenomena and design and conduct experiments which test those hypotheses.

(G) Evaluate advantages, disadvantages and ethical considerations associated with the application of science and technology to the solution of real-world problems.

(H) Evaluate the impact on contemporary and future life of the development and use of varied energy forms, natural and synthetic materials and production and processing of food and other agricultural products.

(4) Environment and ecology

All students will:

(A) Evaluate the nature and functions of ecological systems and the interdependence of the human species with these systems.

(B) Analyze human systems, behaviors and technologies and their effect on ecological systems and environmental quality.

(C) Apply critical thinking to generate viable alternative solutions to environmental issues and to make environmentally sound decisions in their personal and civic lives.

(D) Evaluate the implications of limited natural resources and the need for conservation and stewardship of the environment.

(5) Citizenship

All students will:

(A) Explore themes, patterns and alternative interpretations of history and geography and their meaning to the development of Pennsylvania, the United States and other nations.

(B) Describe the development and operations of economic, political, legal and governmental systems in the United States, assess their own relationships to those systems and compare them to those in other nations.

(C) Examine and evaluate problems facing citizens in their communities, state, nation and world by incorporating concepts and methods of inquiry of the various social sciences.

(D) Take and defend positions on complex issues confronting the United States and other nations, conducting research, analyzing alternatives, organizing evidence and arguments, and making oral presentations.

(6) Appreciating and understanding others:

All students will:

(A) Explore and articulate, in writing and speech, the similarities and differences among varied cultural values and the contributions of diverse cultural groups, including groups to which they belong.

(B) Relate in writing, speech or other media, the history and nature of various forms of prejudice to current problems facing communities and nations, including the United States.

(C) Develop skills of communicating and negotiating with others to solve interpersonal problems and conflicts.

(D) Work effectively with others, recognizing the intrinsic uniqueness, worth, and rights of each person.

(7) Arts and humanities:

All students will:

(A) Describe the meanings they find in various works from the arts and humanities, including visual art, music, dance theater and literature, and judge them on the basis of aesthetic positions.

(B) Respond critically to works of various individuals and cultures from the arts and humanities, including visual art, music, dance, theater and literature.

(C) Relate various works from the arts and humanities, including visual art, music, dance, theater and literature, to the historical and cultural context within which the works were created.

(D) Perform or exhibit talent or skill which they have developed in the arts and humanities.

(8) Career education and work

All students will:

(A) Investigate the multiple purposes of work and explore the range of career options, including entrepreneurship, and relate them to their individual interests, aptitudes, skills and values.

(B) Assess how changes in society, technology and the economy affect individuals and their careers and require them to continue learning.

(C) Use academic and vocational skills needed to seek, obtain, maintain and change jobs, including communication, creative thinking, decision-making, problem-solving, and reasoning, use of resources, acquisition and use of information, understanding and improvement or design of systems and selection and use of appropriate technology.

(D) Exhibit the behaviors and habits needed to seek, obtain, maintain and change jobs, including punctuality, dependability, initiative, working effectively with others, pride in work, sociability, self-management and honesty.

(9) Wellness and fitness

All students will:

(A) Develop knowledge of safety practices and respond appropriately in emergency situations.

(B) Recognize the value of good nutrition to healthful dietary habits.

(C) Learn and apply knowledge of the human body to decision-making related to health promotion and disease prevention and control, including HIV infection and AIDS, tobacco, alcohol and substance use.

(D) Develop knowledge of physical fitness, including aerobic fitness and skills in lifetime sports and outdoor activities to promote lifelong physical activity.

(E) Develop leadership skills and the ability to work cooperatively through participation in team sports or other developmentally appropriate group activities.

(10) Personal, family and community living

All students will:

(A) Demonstrate a comprehensive and thorough understanding of the family, its historical development, and the cultural, economic and political factors affecting it.

(B) Relate basic human development theories to care-giving and child care strategies.

(C) Apply the fundamentals of consumer behavior to managing available resources to provide for personal and family needs.

(D) Develop interpersonal communication, decision making, coping and evaluation skills and apply them to personal, family and community living.

The AAI Project
• Assessment Rubric

Assessment Routine

When evaluating the senior project, the teaching team should include the following as criteria in order to assess the inclusion of A.A.I. according to the following scale:

5 - Demonstrates mastery of concepts and tasks completed up to industry standards.

3 - Demonstrates partial mastery of concepts; average completion of tasks.

1 - Demonstrates below average mastery of concepts; some tasks may require additional work.

Planning

_____Industry and enterprise goals and objectives are clear and appropriate

_____Activities are appropriate and attainable within allotted time (timeline)

_____Research is complete, accurate and well-documented, and reflects an understanding of all relevant laws and regulations

_____Strengths and abilities of each team are recognized in forming planning groups

_____Flow chart accurately reflects structure of groups

Management

_____The management philosophy employed is discernible and appropriate for the type of company and enterprise attempted, and includes a form of assessment of individuals' performance within the system

_____Training is provided for workers with provisions made for a culturally diverse workforce

_____Resources are allocated according to identified needs within the industry

_____Responsibilities are delegated appropriately and for maximum efficiency

Finance

_____Budget is used to both track and forecast spending

_____Budget includes consideration of financing, including appropriate type how to obtain and disperse funds

Use of technology and production skills

_____The most current and widely-used industry technologies are employed in completing the project

_____Proficiency in computer technology is evident, including modifying programs when necessary and writing simple programs

_____Application of skills learned at the worksite is evident

Labor Issues

_____Contracts and work agreements are written with key labor issues and contract elements in mind and reflect an understanding of the history and structure of labor organizations

Community issues

_____A needs assessment has been done to determine both the needs of the community and the impact of the enterprise

_____Resources are used efficiently and appropriately

_____Documentation of the environmental impact of the industrial processes is included

Health, safety and environmental issues

_____Safe practices are used during all phases of the project, and documented completely and appropriately

_____Compliance with all regulations regarding materials, processes and disposal of waste

PEABODY YAP STUDENT PORTFOLIO PRESENTATION AND EVALUATION
SEMESTER B, JUNE 1994 -- Name of Student _____

Directions: The student will present work included from Semester A in his portfolio. As the student presents this work, please rate him from 4 to 0, indicating the extent to which he demonstrates mastery and understanding of the following areas of learning. Please observe the following rating guide: "4" = excellent mastery, A; "3" = very good mastery, B; "2" = average mastery, C; "1" = below average mastery, D; and "0" = no mastery, E, or failing. Be sure to score each area of learning; then give an overall evaluation to the student's presentation.

Name of Evaluator_____

	4	3	2	1	0
1. The student demonstrates knowledge of bridge types, the history of bridge legislation and governmeqtal agencies, involved in bridge construction.	___	___	___	___	___
2. The student demonstrates knowledge of blueprint and map reading.	___	___	___	___	___
3. The student demonstrates knowledge of scientific and/or mathematical principles underlying his bridge project.	___	___	___	___	___
4. The student demonstrates knowledge of the history of Pittsburgh bridges and their impact on transportation access ability and population mobility.	___	___	___	___	___
5. The student demonstrates specific knowledge of construction and/or other job related knowledge and skills associated to the bridge-building project.	___	___	___	___	___
6. The student demonstrates basic understanding of the process of historical research and ability to determine and use time lines to analyze statistical data.	___	___	___	___	___

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	4	3	2	1	0
7. The student demonstrates knowledge of how poetry has contributed to his ability to create a bridge.	____	____	____	____	____
8. The student demonstrates knowledge of accomplishments in writing and identifies areas of growth.	____	____	____	____	____
9. The student demonstrates knowledge of the functions of cooperative team work to complete a task.	____	____	____	____	____
10. Overall rating: The student communicates a clear understanding of the work in his portfolio and demonstrates preparation for this presentation.	____	____	____	____	____

STUDENT OUTCOME ST[illegible]EMENTS C[illegible]MUNICATI[illegible]

Student Name: _____ Grade: _____ Year: _____

Teacher: _____ Employer: _____

Program: _____ Unit of Study: _____

Communications: Each student shall become proficient in reading, composition, listening, speech, understanding, interpreting, analyzing and synthesizing information.	Research: Traditional/ Current Library Technologies	Reading Strategies	Problem Solving: Reading, Discussing, Writing.	Writing for Multiple Purposes	Analysis/ Evaluation of Forms of Communication	Listening/ Speaking Skills	Listening for Purpose	Written/ Oral Presentations	Fore Langu Conver
Project/Activity	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix
Evaluation Summary:									

Comments:

Appendix 13

STUDENT OUTCOME STATEMENTS — MATHEMATICS

Student Name: _____ Grade: _____ Year: _____

Teacher: _____ Employer: _____

Program: _____ Unit of Study: _____

Mathematics: Each student shall become proficient in the use of varied mathematical processes and applications to solve challenging problems and to create new ways of understanding information.	Numbers/Number Systems to Represent Theoretical/Practical Situations	Problem Solving: Compute, Measure, Estimate, Use Calculator, Computer	Problem Solving: Patterns, Functions, Relations	Problem Solving: Processes Used, Reasons	Problem Solving: Use of Algebra, Geometry, Probability, Statistics	Charts, Tables, Graphs: Evaluation, Inference, Conclusions	Statistics: Decision Making, Production, Application of Probability
Project/Activity	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)
Evaluation Summary:							

Comments:

Student Name: _____ Grade: _____ Year: _____

Teacher: _____ Employer: _____

Program: _____ Unit of Study: _____

Science and Technology: Each student shall become proficient in applying the processes of analysis, synthesis and evaluation to the solutions of challenging scientific problems and in the application and understanding of technology in society.	Understanding Development and Application of Scientific Principles	Understanding Basic Concepts: Physical, Chemical, Biological, Earth Sciences	Applied Technology: Materials, Tools, Processes	Understanding Relationships: Science, Technology, Society	Construction, Evaluation: Science and Technological Systems	Application of Scientific Method	Evaluation of Science and Technology, Advantages, Disadvantages Ethical Implications	Evaluate Imp of Energy Forms, Natu and Synthet Materials, Production Processing Food
Project/Activity	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
Evaluation Summary:								

Comments:

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Student Name: _____ Grade: _____ Year: _____

Teacher: _____ Employer: _____

Program: _____ Unit of Study: _____

Environment and Ecology: Each student shall understand the environment and the student's ecological relationship with it in order to recognize the importance of the quality of life in a healthy and balanced ecosystem.	Description of Ecosystems	Effects of Social Systems, Behaviors, Technologies	Environment: Critical Thinking and Problem Solving	Conservation
Project/Activity	(I)	(II)	(III)	(Iv)
Evaluation Summary:				

Comments:

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The Bridge Project

- **Student Portfolios**
- **Master Project Portfolio**

The Pennsylvania Youth Apprenticeship

Bridge Project
Portfolio

SAMPLES FROM STUDENT PORTFOLIOS

215

PITTSBURGH PUBLIC SCHOOLS

Peabody High School

Youth Apprenticeship Program

Certificate of Recognition

Presented to

Bridgeco

Joshua Jones

Best Marketing Presentation

DR. FRED A. MONACO

Director of Applied Technology and Career Development

220

BRIDGCO

1994 BRIDGE COMPETITION

TEAM
Project Director: Joshua B. Jones
Architect: Monica Grimes
Chief Engineer: Joshua B. Jones
Accountant: Jason Rivers
Carpenter: Joshua B. Jones

Executive Summary

The BRIDGCO team had the assignment of building a load-bearing bridge by June 7, 1994. Instructors specified all materials, and set the budget at $1,550,000. The assigned objective was to out-perform competing teams by designing and building a structure that would bear a reasonable weight, *while finishing within budget and on time*. Based on this assignment, our team objectives were to:

1. Perform effectively as a team.
2. Produce a quality bridge.
3. Complete the project within budget.
4. Out-perform competitors in construction time.
5. Choose innovative design.

We at BRIDGCO believe that we have successfully achieved all of these objectives. This presentation discusses BRIDGCO's strategies for design, construction and marketing. It also outlines positive aspects of the bridge design and structure, and explains the aesthetic attributes of the bridge. The final section provides the reasons why **BRIDGCO builds the best bridges**.

Design and Construction Strategy

The BRIDGCO team selected a truss bridge for several reasons. The truss bridge is a low profile design, so no arch or cable components are required. Truss bridges are typically used for train and truck route crossings, well suited for load-bearing over short spans. On a limited budget and with a tight time schedule, a short span was the best choice for BRIDGCO.

The team strategy was to take and maintain the lead in construction scheduling. BRIDGCO completed design and began construction ahead of all competitors. However, the advantage created by our fast start was taken away when industrial espionage resulted in stolen structural design aspects. We decided to stick to our original design plans, believing that competitors could not complete the project as effectively. This is where key elements of our market strategy would come into play.

Market Strategy

The bridge building market in this area is saturated and highly competitive. BRIDGCO has three primary competitors: 1) Omni Bridge Company, 2) High-Tech Bridge Company, and 3) Lucille Bridge Company. We analyzed our competitors to figure out how they build bridges. We looked at four main factors that were important for this competition: Scheduling, Weight Capacity, Aesthetics, and Cost.

Omni Bridge Company is a strong competitor. They specialize in fancy bridges, nice to look at and with high load-bearing capacity. But we estimated that for this bridge project Omni would go at least $750,000 over budget.

Hi-Tech Company is the highest cost competitor. We estimated that they would end up at about double the contract cost of this project and spend about $3,000,000. Their weakness is in cost, even though their bridge ***may*** be strong. They also run very close to missing construction deadlines.

A Company is strong in the area of planning. But they currently have some internal problems that have caused defective construction. Their weakness is in bridge quality.

The BRIDGCO bridge is designed to be functional, and it's aesthetic appeal is in its simple, functional appearance. BRIDGCO could not compete with the aesthetic quality of Omni. But we could compete with all others on load bearing capacity, scheduling and pricing. **We decided that our market approach should be to have the lowest cost/capacity ratio of all the companies.** This meant that we had to build a bridge that would hold the most weight for each dollar of construction costs.

We decided to accomplish this and still stay within the budget. And we would meet all construction deadlines. BRIDGCO believes that no other bridge company could compete with us on this basis.

The exact cost/capacity ratio should be calculated at the strength contest based on this simple formula:

$$\frac{\text{Total Bridge Construction Costs (\$)}}{\text{Contest Breaking Point (Lbs.)}}$$

Best Bridge Rationale

We believe that BRIDGCO builds the best bridges for these reasons:

1. The customer gets their money's worth with the best Cost/Capacity ratio.
2. The customer gets their bridge faster than with any other bridge company.
3. The customer gets their high quality bridge within the set budget.

That's why we believe that **BRIDGCO builds the best bridges!**

PITTSBURGH PUBLIC SCHOOLS

Peabody High School

Youth Apprenticeship Program

Certificate of Recognition

Presented to

Bridgeco

Joshua Jones

Aesthetics

Dr FRED A. MONACO

Director of Applied Technology and Career Development

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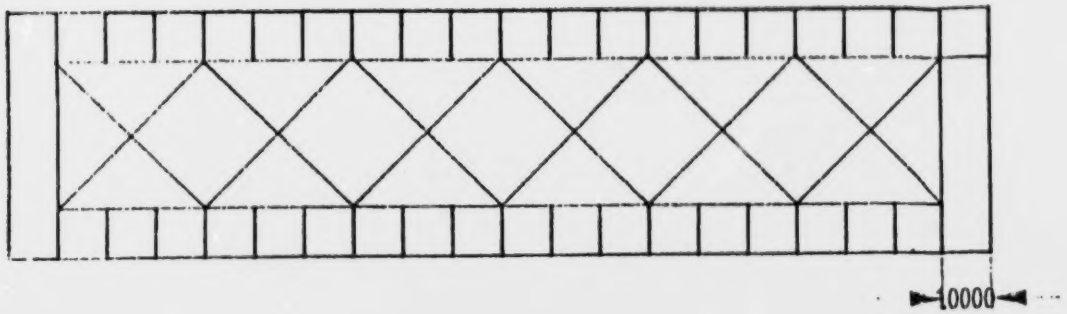

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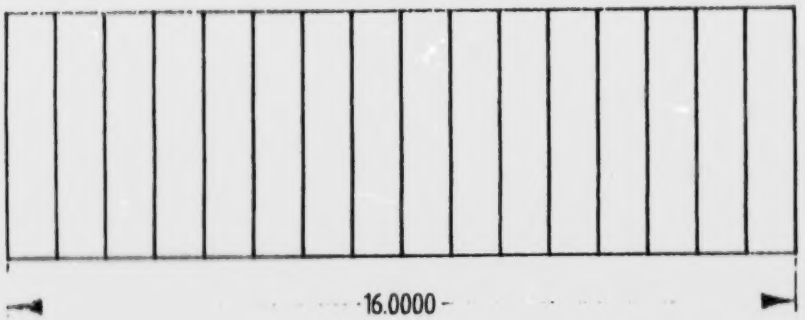

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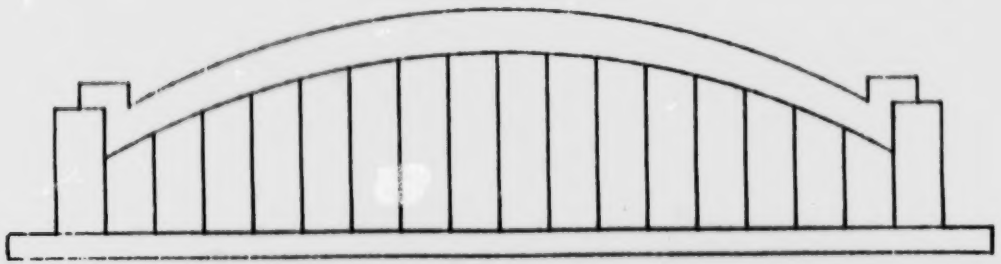

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Name: Josh Jones

Evaluation Sheet

The Concrete Bridge Poem

	Yes	No
The shape of the poem is clear and easily identifiable	/	
The text is easy to follow despite the difficulties the shape imposes	/	
The text and the shape of the poem work together to communicate meaning	/	
The text of the poem relates either a literal relationship or comparative relationship to bridges	/	
The poem has a key point	/	

Teacher's Comments:

I very much enjoyed this poem Josh. I like the key point & the metaphor/comparative relationship to bridges. I would have liked you to have dug a little deeper, esp. with the communication aspect of the poem — it seems central, but you switch to a different thought. I like the last line in particular.

Score 45/50 Grade A-

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The Pennsylvania Youth Apprenticeship

Bridge Project
Portfolio

MASTER PROJECT PORTFOLIO

NAME_____ DATE _____

BRIDGE OBSERVATION FORM

BRIDGE	LOCATION	TYPE	MATERIAL	AESTHETICS
231				232

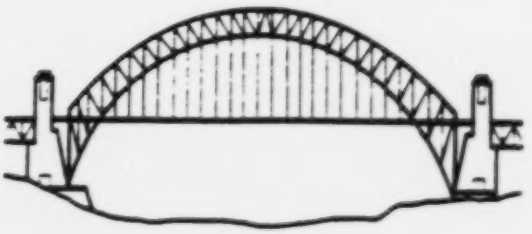
Bridge Project Terminology

General Bridge Types

The Arch Bridge:

An arch bridge is an unsupported steel or stone curve that spans a given space. It may also be made of concrete. A concrete arch is often "reinforced" for additional support and strength. The arch bridge may look like this:

Larimer Avenue Bridge

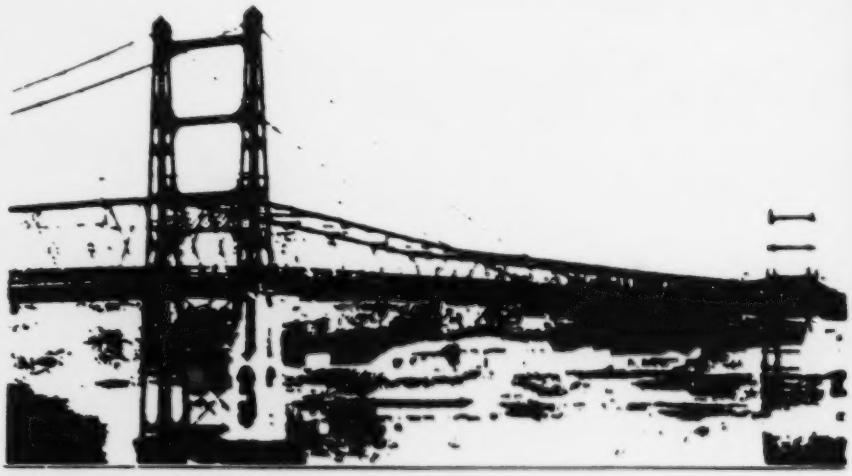


The Cantilever Bridge:

A cantilever bridge is a bridge that projects over mid-stream and is so balanced that the projected part or bracket is counter-weighted and anchored down by the shore ends of the structure. A cantilever bridge may look like this:

The Suspension Bridge:

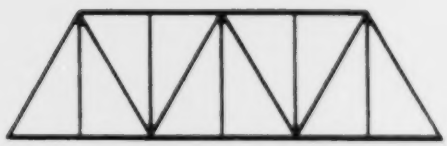
A suspension bridge is any bridge whose roadway is hung to freely suspended cables which pass over towers and are anchored to the shore at each end. They often look like this:



The Truss Bridge:

A truss bridge consists of a framework of triangles whose ends are pin-connected or riveted to continuous top and bottom chords. Three variations of the simple truss are known as the camel-backed truss, the bow-string truss, and the lenticular/fish-bellied truss. Each are illustrated below.

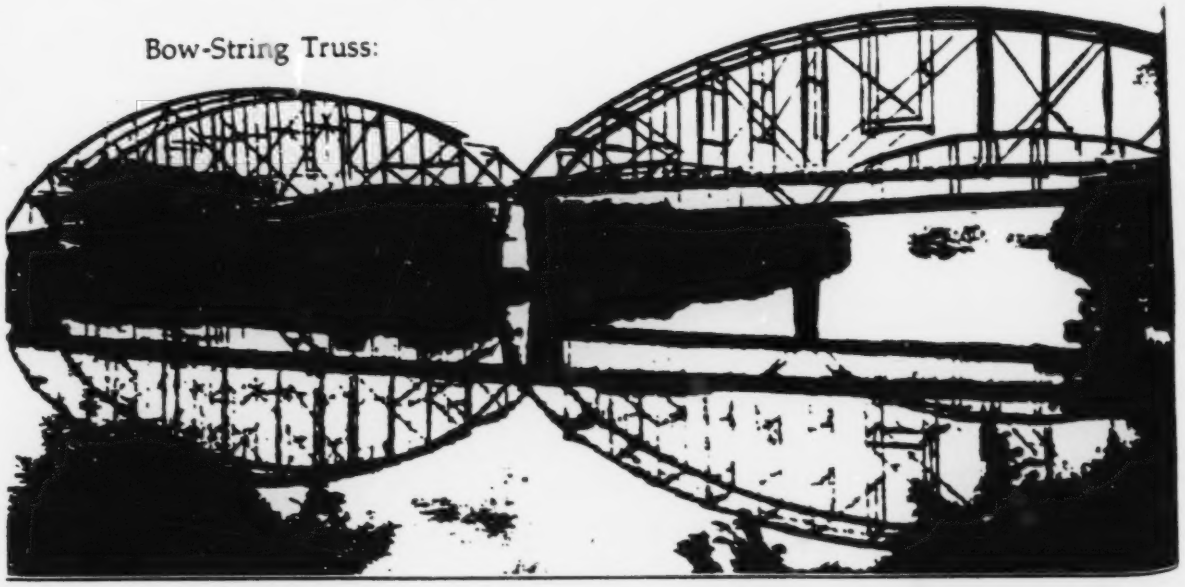
Simple Truss:



Camel-Backed Truss:

Panhandle Division Bridge Pennsylvania Railroad

Bow-String Truss:



Lenticular/Fish-Bellied Truss:

Southwest Street Bridge from the north

(this truss type is unique because the upper chord is an arch thrusting outward while combined with a lower chord in the form of a catenary pulling inward)

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Plate Girder Bridge:

The plate girder bridge consists of a solid steel plate strengthened at certain panel lengths with steel angles placed vertically. It would look like this:

From its general appearance, a bridge may be readily recognized as a "deck bridge" or a "through bridge."

Deck Bridge: As a deck bridge, the roadway is open to the sky as the deck of a ship; its supporting steel work is below the roadway, as in the Liberty Bridge.

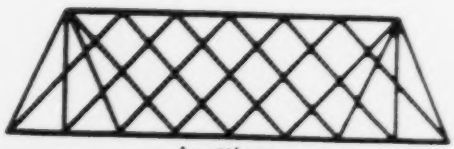
Through Bridges: In a through bridge, much of the supporting steel is above the roadway, as in the Smithfield Street Bridge. As one crosses a through bridge on either side are great steel frames; overhead are cross bracings of steel.

Bridge Parts

Masonry: Stonework or brickwork

Piers: An intermediate support for the adjacent end of two bridge spans.

Lattice: A framework of crossed wood or metal.



Lattice

Gable: Vertical triangles that exist in the frame of the bridge.

Aluminum: A metal used in the construction of bridges.

GABLE

Terminals: The ends of bridges.

Portals: The entrance or "doorway" to the bridge.

Cable: A rope or metal chain of great tensile strength used as support in a suspension bridge.

Rivet: A bolt of metal that was used in the early construction of bridges.

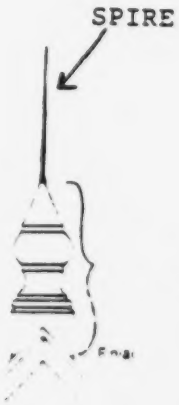
Flange: Rim of a bridge whose function is one of strength.

Abutment: The part of the bridge structure that receives pressure.

Superstructure: Overhead Support/the bridge is supported from above.

Substructure: Support from underneath/the bridge is supported from below.

Finial: A crowing ornament or detail. A decorative knob.



Spire: A slender tapering blade coming to a pointed tip.

Hand-railing: Decorative siding.

Lighting Fixtures

Aesthetic Considerations

Aesthetic: The actual beauty of the bridge.

Environment

Materials

Symmetry: A concern for balanced proportions. For example, are there railings on both sides of the bridge, are the lighting fixtures equally spaced?

Harmony: How well a bridge compliments and "fits-in" to its surroundings.

Economic/Economical: Referring to how well resources are carefully and efficiently used.

Gilded: To give an attractive outward appearance.

Topography: Of or relating to the landscape.

Proportion: Referring to how well a bridge corresponds in size, degree, or intensity to its surroundings and to itself.

Ornamentation: Something that lends itself to beauty or accessory (i.e. lighting fixtures, hand-railings, portals).

Rivers

Allegheny

Monongahela

Ohio

The People Involved

Architect: The aesthetic consultant.

Engineer: The structural designer.

Civil Engineer/Agencies: A person whose training is in the construction of public works (i.e. someone who designs roads, highways, or bridges).

Legislators: Those who write the legislation regarding the structural and aesthetic guidelines for bridge building.

Construction of a Pier

Coffer-Dams: This consists of rows of piles or planks or interlocking sheet piles driven into the bottom of a river to form a waterless work area.

Caissons: A watertight chamber used in construction work under water or as a foundation.

Some Basic Design Terms

VERTICAL

Vertical: Perpendicular/upright.

Horizontal: Parallel/left to right. HORIZONTAL

Curved: Relating to the construction of the arch.

Angles: A figure formed from 2 lines extending from the same point.

Chord: A straight line joining 2 points on a curve.

Name_____ Date_____

Youth Apprenticeship:
Bridge Terminology Exam

Part One:

Directions: Match the correct definition with the corresponding term.

1. _____ AESTHETIC
2. _____ HARMONY
3. _____ RIVET
4. _____ MASONRY
5. _____ LATTICE
6. _____ SYMMETRY
7. _____ TOPOGRAPHY
8. _____ GABLE
9. _____ FLANGE
10. _____ SPAN

A. VERTICAL TRIANGLE
B. BOLT OF METAL
C. RIM FOR STRENGTH
D. RELATING TO THE LANDSCAPE
E. BEAUTY
F. HOW WELL A BRIDGE COMPLEMENTS ITS SURROUNDINGS
G. BALANCED PROPORTIONS
H. STRETCH ACROSS
I. HOW WELL A BRIDGE COMPLEMENTS ITS SURROUNDINGS
J. STONEWORK OR BRICKWORK
K. FRAMEWORK OF CROSSED WOOD OR METAL

Part Two

Directions: Answer the following questions with **complete**, short answers.

11. What is the difference between a **deck bridge** and a **through bridge**? (a drawing might help you explain)

12. What is the function of each of the following careers in regard to the bridge building process?

A. ARCHITECT: _____

_____

B. CIVIL ENGINEER: _____

_____

C. LEGISLATOR: _____

_____

13. What are the three rivers that meet in Pittsburgh? (spell them correctly)

A.

B.

C.

14. What are the 2 possible ways to construct a peer? Why are they necessary?

A.

B.

C. Why are they necessary? _____

_____

Part Three

Directions: Draw and label according to the instructions. Be sure your drawings are clear and accurate and that you identify what you've labeled in an obvious way.

15. Draw and label a **gable**, a **finial**, and a **spire**:

16. Draw and define each of the following basic design terms:

A. **Curve**:

Definition of a curve:_____

B. **Angle**:

Definition of an angle: _____

C. **Chord**:

Definition of a chord: _____

Part Four

Directions: For each of the following illustrations:

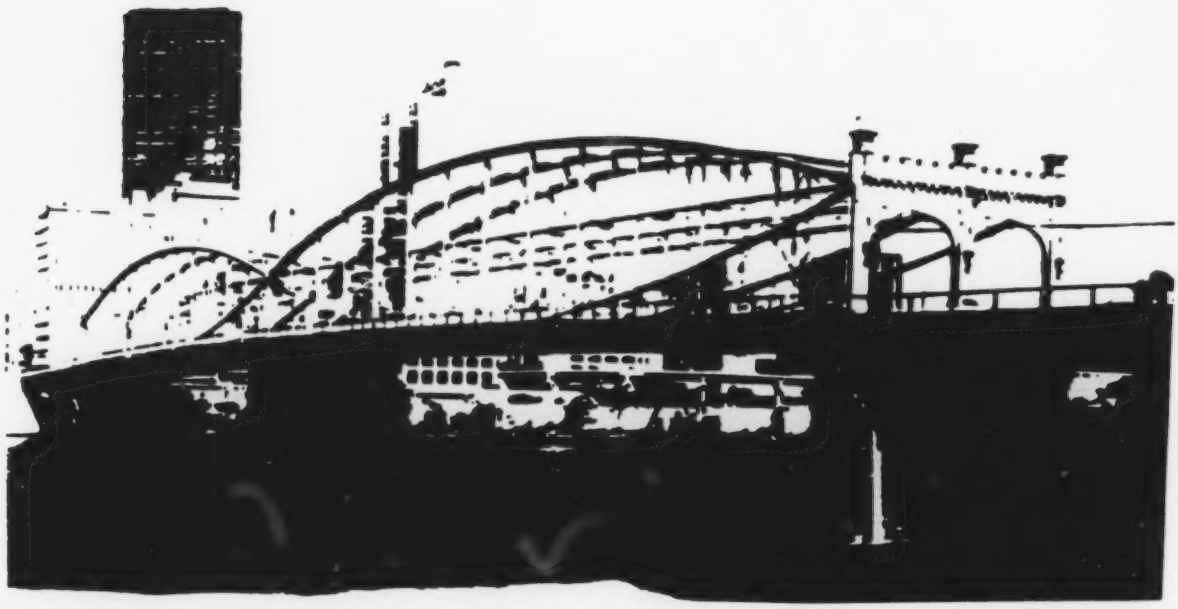
(A) Identify the bridge type
(B) Identify the major features that distinguish its type
(C) Tell whether it receives its greatest support from a substructure or superstructure.

17. (A) Type:_____

(B) Features: _____

_____

(C) Support: _____



18. (A) Type:_____

(B) Features: _____

_____

(C) Support: _____

19. (A) Type: _____

(B) Features: _____

_____

(C) Support: _____

20. (A) Type: _____

(B) Features: _____

_____

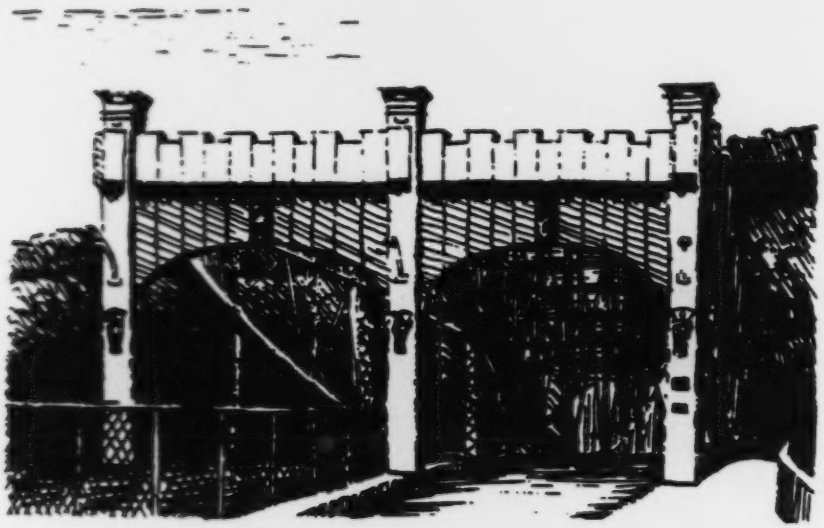
(C) Support: _____

Part Five

Directions: Using either of the drawings below (or both), clearly locate and label all of the following bridge parts:

Portal **Pier(s)** **Terminal** **Cable(s)** **Hand-Railing** **Chord**

Finial **Arch** **Masonry** **Superstructure**



JOB DUTIES AND SCHEDULE

COMPANY NAME _____

Put check in box daily if job is being done.

COMPANY EMPLOYEES _____

_____

Project Director: (List Name)	Dates
1. Keeps this schedule; makes sure all company members do their jobs.	
2. Keeps daily journal of company's progress, recording any problems and their solutions.	
3. Signs and approves building plans, checks, order forms.	
4. Prepares Environmental Impact Statement with help of company employees.	
5. Produces official Company Bridge Project Report with help of company members.	
6. Makes sure construction site is neat and organized.	
7. Cleans up site and stores bridges each day.	
8. Keeps manila envelope with all company records.	
9. Helps with construction.	
10. Develops and delivers a sales presentation with the Architect.	
11. Performs duties of anyone who is absent on any given day.	

JOB DUTIES AND SCHEDULE

COMPANY NAME _____

Put check in box daily if job is being done.

COMPANY EMPLOYEES _____

_____

Architect: (List Name)	Dates														
1. Designs bridge and draws plan to scale.															
2. Shows others how to construct bridge according to the plans.															
3. Keeps inventory of building materials on hand at site.															
4. Helps Project Director produce Environmental Impact Statement.															
5. Helps Project Director produce official Company Bridge Project Report.															
6. Makes sure actual bridge being built follows and looks like the plans.															
7. Helps with construction.															
8. Orders supplies, filling out order forms as needed.															
9. Designs aesthetic features to enhance bridge design, with input from employees.															
10. Develops and delivers a sales presentation with Project Director															

JOB DUTIES AND SCHEDULE

COMPANY NAME _____

Put check in box daily if job is being done.

COMPANY EMPLOYEES _____

_____

Carpenter/Engineer: (List Name)	Dates															
1. Builds bridge according to architect's plans., along with other company members.																
2. Consults with architect as building proceeds.																
3. Supervises the company members who help with construction.																
4. Helps Project Director prepare Environmental Impact Statement.																
5. Helps Project Director produce official Company Bridge Project Report.																
6. Supervises the application of aesthetic ornamentation; helps to construct such ornamentation.																
7. Assists architect with planning the bridge and drawing designs to scale.																
8. Gives input into sales presentation to be made by Architect and Project Director.																
9. Additional Duties:																

JOB DUTIES AND SCHEDULE

COMPANY NAME _____

Put check in box daily if job is being done.

COMPANY EMPLOYEES _____

_____

Accountant (List Name)	Dates
1. Builds bridge according to architect's plans., along with other company members.	
2. Writes checks to go with order forms.	
3. Makes sure that the company account balances.	
4. Meets with auditor if necessary.	
5. If necessary, buys supplies needed for aesthetic ornamentation of bridge.	
6. Helps the Project Director prepare the Environmental Impact Statement.	
7. Helps the Project Director produce the official company Bridge Project Report.	
8. Gives input into sales presentation to be made by Architect and Project Director.	
9. Additional Duties:	

YAP Team Plans
Bridges May 2, 3, 4

Monday, May 2, Period 1

1. Identify members of each company and purpose of project.
2. Budget for each company: $1,550,000.00
3. Identify "roles" of each employee: project director, architect, carpenter/engineer, accountant.
4. Discuss 5 awards that will be given to winning companies.
5. Students meet in companies and choose names.

Monday, May 2 - Period 2

1. Teachers meet with students by role and explain duties in detail.
2. Students give feedback as to individual duties.

Monday, May 3 - Periods 3 & 4

Students work on EPA documents.

Tuesday, May 3 Period 1

1. Students review procedure for ordering supplies.
2. Identify project and warehouse sites.
3. Warehouse clerk - all teachers. (Place teacher audit sheet for each company in desk in a folder.)
4. Identify supplies available and cost of each.
5. Students can begin to meet in companies to give input into construction design - consider math and science principles on which to base bridge design. Project Director and Architects take notes.

Tuesday, May 3 - Period 2

1. Students continue to meet by company to give input into bridge design. Must document (Project Directors and Architects take notes) science/math principles involved in bridge design.

2. Tell all students to begin to sketch preliminary plans. Bring to class on Tuesday. Complete for homework.

Tuesday, May 3 - Period 3 & 4

EPA documents continued

Wednesday, May 4 - Period 1

Students brings in preliminary sketches. Companies discuss feasibility building a particular bridge:

1. on chosen site
2. strength (math/science)
3. cost - students begin to calculate cost based on price list
4. aesthetic consideration

Wednesday, May 4 - Period 2

1. Complete work begun during Period 1.
2. Make a final decision on plan. Architect begins to draw bridge to scale. Note: students will draw "official blueprints" in technical drawing next week.

Wednesday, May 4 - Period 3

Review what Bridge Project report will include. Have each company write:

Purpose
Math/Science applications
Materials sections

Wednesday, May 4 - Period 4

Conclude EPA report. Continue working on beginning of Project Report.

WRITING THE SCIENTIFIC REPORT
DESCRIBING A PROCESS

(NOTE: USE COMMON SENSE AND INCLUDE THOSE ASPECTS OF SCIENTIFIC WRITING WHICH APPLY TO YOUR ASSIGNMENT OR TASK. FOR FURTHER REFERENCE, CONSULT YOUR *GRAMMAR AND COMPOSITION, 11* BOOK, PP. 124-143. HERE YOU WILL FIND EXAMPLES TO HELP YOU UNDERSTAND MORE ABOUT THE CATEGORIES LISTED BELOW.)

THE SCIENTIFIC OR PROCESS REPORT

When writing a scientific report, include the following sections:

1.	PURPOSE	For Bridge Project, include the purpose of the Bridge Designing and Building. Explain your design and scientific and mathematical considerations utilized in your design.
2.	SCIENCE/MATH APPLICATIONS	
3.	MATERIALS	
4.	PROCEDURE	
5.	CONCLUSIONS	For Bridge Project, write the results of your bridge building project and discuss the reasons for those results.

PURPOSE
State the purpose of your experiment or design creation. Your task may, and often should, be stated in the form of a question. This will help you to focus on what you are trying to accomplish and give the reader of your report a clear idea of your experiment or task. In this section, you should include any scientific knowledge, mathematical knowledge or assumptions that explain why the experiment or process was designed in a certain way. This is the section in which you would state a hypothesis, if the assignment requires you to do so. You would also give the scientific information which led you to this particular hypothesis. Also, any key terms used in a narrow or specialized way should be defined in this section.

SCIENCE/MATH APPLICATIONS

MATERIALS
List all materials needed for your experiment or design creation. If you are explaining how something should be constructed or done, make sure you include a list of all parts and tools the reader will need to accomplish the task.

PROCEDURE OR PROCESS
Use whatever title (Procedure or Process) is more appropriate.
1. List the steps in the process; number each step in sequence. Include specific references to materials and/or tools used at each step of the process.
2. Using your list, now summarize in paragraph form your procedure or process. Do not exclude any step in the process. Use words like "first," "second," "next," "then," " now," "finally," etc. so that the reader can logically follow the process you are describing.

5. CONCLUSIONS – See page one.

(1) If you have been trying to find an answer to a specific question. write the answer and underline it. (2) Then write the numbers from your data that support your answer. Make sure you make a clear connection between your data and your conclusion. (3) Finally, show how the results of your experiment can be applied to the real world. You can also list additional related questions which might be investigated further.

DESCRIBING A PROCESS OR AN OBJECT AND ITS USE

1. Name the object or the process.

2. State the purpose for which the object or process is used. (Example: A catalytic converter is a small metal cannister that cleans up emissions from automobile exhausts.)

3. If the object is unfamiliar to your reader, you may compare it to something with which the reader is familiar. (Example: The catalytic converter looks like a muffler that is installed in the car's exhaust system between the engine and the muffler.)

4. If a person performs the process, give that person a title: solderer, farmer, machinist, etc.

5. Now, list the steps in the process or the steps in using the object from start to finish. Then write the sequence of these steps in logical sentences, being sure to use appropriate connecting words and phrases.

(Note: Use the sentence process summaries when you write for your teacher or a scientific audience; use the step-by-step list when you expect your reader to follow your directions and duplicate your process. For example, in constructing a model, you would use a step-by-step list to show how to construct a model. When creating a simple machine and writing your report on how you designed and created that machine, use a sentence process summary in the final report. Knowing who your audience is will determine what your final report looks like, how it is written, and what is included in it.)

6. Consider your audience further. If your audience is a general audience who may or may not be familiar with your subject, be sure to define unfamiliar terms and use simple language. If lour audience is a more scientific or specialized person or lgroup, you may use more scientific, specialized terms that your audience knows.

WRITING STRATEGIES

1. Stick to the facts.

2. Use helpful visual aids.

3. Be objective; keep your personality and emotions out of the report.

4. Avoid unnecessary repetition.

5. Use connecting words and phrases to create logical links for reader. (Examples: because, since, if , then, therefore, next, first, now, third, finally, after etc.)

6. Link your sentences so that the thought flows smoothly.

Agency Coordination Meeting (ACM)

Environmental Resource and Regulatory Agency Profiles

FEDERAL AGENCIES

U.S. Army Corps of Engineers

Expertise in water resources management, engineering, and construction allows the Corps of Engineers to effectively administrate federal laws regulating development activities that affect the waters of the United States. **Under Section 10 of the River and Harbor Act of 1899**, the Corps has jurisdiction over all construction activities in tidal and/or navigable waters, including adjacent wetlands shoreward to the mean high water line. In other areas, such as non-tidal waterways, adjacent wetlands, isolated wetlands, forested wetlands, and lakes, **Section 404 of the Clean Water Act of 1977** gives the Corps regulatory authority over the discharge of dredged or fill material.

The Corps' **Permit Program** for Section 10 and Section 404 is designed to ensure that our nation's water resources are safeguarded, that they are used in the best interest of the people, and that environmental, social, and economic concerns of the public are considered.

The Army Corps of Engineers and the Environmental Protection Agency (EPA) jointly administer the **Section 404 Permit Program**. The Corps has the sole authority to issue or deny these permits, while the EPA assists in the development of the program's environmental standards and is responsible for enforcement along with the Corps. In addition, the EPA can veto the Corps' decision to issue a Section 404 permit.

Through the July 1992 agreement entitled ***Integrating NEPA/404 for Transportation Projects***, the Corps and the EPA have established a system whereby the NEPA environmental clearance and the Section 404 permit application review processes proceed concurrently. The Corps is asked to serve as a cooperating agency for all projects that can be expected to affect wetlands, rivers, streams, or other surface waters. As cooperating agency, the Corps considers the Draft EIS as back-up documentation for the Section 404 permit application, and a joint NEPA/404 Public Hearing is conducted.

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U.S. Fish and Wildlife Service

This agency is an arm of the **U.S. Department of the Interior**, which is the nation's principal conservation agency. The Department of the Interior is responsible for most of our nationally-owned public lands and natural and cultural resources, which includes fostering wise use of land and water resources, protecting fish and wildlife, preserving the environmental and cultural values of our national parks and historic places, and providing for outdoor recreation.

The U.S. Fish and Wildlife Service is the principal agency through which the federal government conserves, protects, and enhances the nation's fish and wildlife and their habitats—particularly migratory birds, certain marine mammals, and freshwater and anadromous fish. The Service identifies threatened and endangered species of fish and wildlife, which are placed on the Interior Department's official **"List of Endangered and Threatened Wildlife and Plants."** It also manages our **National Wildlife Refuges**.

Under the **Fish and Wildlife Coordination Act (FWCA)**, the Service comments on potential impacts to fish and wildlife resources by a wide variety of activities related to water resources development. In addition, the National Environmental Policy Act (NEPA) of 1969 provides for a review of project alternatives that would avoid or minimize adverse environmental impacts, and for mitigation of unavoidable impacts. In accordance with this legislation, the Service has jurisdiction over federally sponsored or funded development projects that have the potential to affect fish and wildlife and their habitats.

- Under **NEPA**, the Service reviews and comments on Environmental Impact Statements.
- The U.S. Army Corps of Engineers solicits comments from the Service for Section 404 Permits issued in accordance with **Section 404 of the Clean Water Act**.
- Under the **Endangered Species Act of 1973**, the Service reviews projects that could impact threatened and endangered species, and recommends ways to avoid disturbing critical habitats.

Thus, the U.S. Fish and Wildlife Service is an active partner in developing major transportation improvement projects in Pennsylvania.

Pennsylvania Department of Environmental Resources (PADER)

As the Commonwealth's primary protector of natural resources and water quality, PADER functions in an advisory capacity to the U.S. Army Corps of Engineers in the **Section 404 Permit Program**. In addition, PADER has regulatory authority in a wide variety of federal and state permit programs and resource protection initiatives, including, but not limited to:

- Clean Water Act (Section 401) Water Quality Certification
- Coastal Zone Management Act
- Dam Safety and Encroachments Act (PA Admin. Code Chap. 105),
- Erosion and Sedimentation Control
- Floodplain Management
- Pennsylvania Clean Streams Law
- Protection of Threatened and Endangered Species
- Sewage Facilities Act
- Storm Water Management Act
- Wild and Scenic Rivers Program.

Because PADER's regulatory involvements are too numerous to describe in detail, this profile highlights two of the environmental clearances the agency issues.

Section 401 authorizes PADER to deny "water quality certification" to any applicant for federally permitted or licensed activities that may result in a discharge to United States waters, if the applicant cannot demonstrate compliance with Pennsylvania water quality standards and other federal and state laws and regulations. When a permit is denied, a federal agency may not issue a permit or license for the project in question.

Under **Chapter 105**, the PADER administers permits for the construction, operation, maintenance, modification, enlarging or abandoning of any dam, water obstruction, or encroachment on a watercourse, floodway, or body of water (including wetlands). Before issuing a permit for encroachment, DER must consider a number of factors, including effects on the ecology of the water, fish and wildlife, and aquatic habitat; impacts on public lands and recreation areas; and consistency with floodplain and stormwater management programs.

Pennsylvania Game Commission

Under the provisions of the **Pennsylvania Game Law**, this independent administrative agency is directed to "...protect, propagate, manage, and preserve the game, furbearing animals, and protected birds of the State...." The **Pennsylvania Game and Wildlife Code** confers upon the Game Commission executive jurisdiction over the administration and management of all the state's wildlife resources. In accordance with **Title 58, Rules and Regulations**, the Commission's Wildlife Management Staff conducts surveys, censuses, and research studies of wildlife species to assist in monitoring these resources. The Commission also administers all of the official **State Gamelands**.

The Game Commission participates in the review of major transportation projects that have the potential to affect wildlife resources, but it does not exercise regulatory authority over these projects. Its reviewing activities include:

- identifying **State Threatened and Endangered Species and Species of Special Concern**.
- evaluating impacts to State Gamelands under **Section 4(f) of the U.S. Department of Transportation Act of 1966.**
- commenting on **Chapter 105** and **Section 404** permit applications.
- reviewing **PAMHEP** reports, specifically to evaluate the potential impacts of alternatives on both terrestrial and wetland habitats, and to recommend ways to replace habitat units lost.

Application and Permit Procedure

1. Read Federal Agencies

2. Research and define the following terms:

PADER
encroachment
EPA
NEPA
navigable
adjacent
wetlands
dredged
fill material
compliance
environmental impact
jurisdiction
mitigati9on
aquatic resources
cultural values
enhance
habitats
migratory
anadromous
endangered species
wildlife refuge
tidal water
flood plain
initiatives
sedimentation
clearance
certification
modification
ecology
aquatic
amphibians
biota
PennDOT
verification
designee
N.A.
DER
Pa. Fish and Boat Commission
PHMC
NHPA
excavation
archaelogical
SHPO
verification
FWCA
regulatory

Legal/Technical Terms

evidence of
search for
reference to
location of
specific to
in relation to
review process
consideration
identify
alternatives
preliminary
critical
analysis
examination
mandated
maintain
predominant
management
significant
pertinent
pertaining to
documentation
sufficient
integrate
potential
consistency
review
experitse
in accordance with
recommend
suggest
reasonable
prudent
assist
function
quality
numerous
obstruction
administer
alignment
establish
discharge
opportunity
terrestial
encompass
magnitude

PennDOT Route Approval Application

Applicant_____Date_____

Project Name_____

Site Location _____

_____

Map Attached_____

U.S. Coast Guard Clearance #_____

Fish & Boat Commission Approval #_____

PHMC Approval #_____

Project Director or Designer

_____

Penn DOT Official Signature

_____

Rte. Approval #_____

Pa. Historic Museum Commission - Sec. 106 - The National Historic Preservation Act - 1966 Verification Application

Applicant_____ **Date**_____

Project Name_____

Site Location_____

_____

Impact Statement:

Project Director or Designer **SHPO Official Signature**

_____ _____

PHMC Approval #_____

Pa. Fish and Boat Commission Review Statement

Applicant_____Date_____

Project Name_____

Site Location_____

_____

Impact Statement:

Project Director or Designer

_____

Pa. Fish and Boat Commission
Official Signature

_____

Impact Approval #_____

U. S. Coast Guard: Transportation Project Application

Applicant_____ **Date**_____

Project Name_____

Site Location _____

_____

Map attached_____

Vertical Clearance Requirements:

Project Director or Designer **U.S.C.G. Official Signature**

_____ _____

Clearance #_____

Chapter 105 DER Regulatory Permit Application

Date_____

Applicant_____

Project Name_____

Site Location_____

_____

_____

Impact Statement:

Project Director or Designer

_____

PADER Official Signature

_____

Encroachment Clearance #_____

U. S. Army Coprs of Engineers - Permit Program

Section 10: River and Harbor Act - 1899, section 404: Clean Water Act - 1977; Revised 1992 - Transportation Project: Application

Applicant_____**Date**_____

Project Name_____

Site Location_____

_____

_____

Site Particulars:

Bridge span_____**Length**_____

Dredging requirements_____

_____

Fill requirements_____

_____

NEPA verification #_____

Fish & Wildlife verification #_____

State DER verification #_____

Project Director or Designer

_____

Approved:_____

Disapproved:_____
Reason:

Corps of Engineers Official Signature

_____

Initial Construction Date:_____

Expected Completion Date:_____

Environmental Protection Agency
NEPA Environmental Clearance Application
Section 309 - Clean Air Act

Applicant_____Date_____

Project Name_____

Site Location_____

_____

State Transportation Rt. Approval #_____

Fish & Wildlife Service Approval #_____

Environmental Impact Statement:

Project Director or Designer

_____

NEPA Official Signature

_____

Environmentall Satisfactory_____ Unsatisfactory_____

Approval #_____ NEPA

Fish & Wildlife Service (Dept. of Interior)
Environmental Review - Impact Statement

Addendum to NEPA **Date**_____

Co. Proposing Transportation Project:

_____

Proposed Project Name_____

Site Location_____

_____

Environmental Statement (Clean Water Act Provisions)
(Endangered Species Provisions)

Project Director or Designer **F & W Official Signature**

_____ _____

Environmentally Satisfactory_____ **Unsatisfactory**_____

Approval #_____

Disapproval:

RESOURCES ON TEACHING ALL ASPECTS OF THE INDUSTRY

Organizations Offering Technical Assistance on AAI

National Center for Research in Vocational Education (NCRVE)

2150 Shattuck Avenue, Suite 1250, Berkeley, CA 94704, (510) 642-4004, (800) 762-4093, fax: (510) 642-2124. Contact Erika Nielsen Andrew, (510) 642-5759, e-mail: erikana@uclink.berkeley.edu. NCRVE is the nation's largest center for research and development in work-related education. Headquartered at the University of California at Berkeley since 1988, NCRVE has played a key role in developing a new concept of vocational education as it works towards fulfilling its mission *to strengthen education to prepare all individuals for lasting and rewarding employment, and lifelong learning*. Areas of particular emphasis include (1) integrated curriculum (secondary and postsecondary), (2) all aspects of the industry, (3) work-based learning (especially school-based enterprise and co-op), (4) performance measures and standards, and (5) student services. The following are among the variety of materials and services offered by the NCRVE:

- *Publications*
  Resource papers/research syntheses, newsletters/periodicals, monographs, and reports

- *Conferences, Training, and Technical Assistance*
  Conferences, summer institutes, and teleconferences; electronic communications and networking information; referral services; and technical assistance in such areas as recruiting, hiring, and advancing minorities, professional leadership development, and program improvement for special population students

Center for Law and Education

1875 Connecticut Avenue, NW, Suite 510, Washington, DC 20009, (202) 986-3000. e-mail: HN1669@handsnet.org. The Center's VOCED Project helps low-income students and their communities redirect vocational education programs to better meet their long-term educational, social, and economic needs. Drawing on this experience, the VOCED Project publishes both policy papers and practical guidance on how to improve programs. The VOCED Project also conducts workshops and conferences. Areas of particular emphasis include (1) integrating vocational and academic education; (2) framing

programs around all aspects of the industry students are preparing to enter; (3) involving vocational education students directly in community economic development; (4) meeting the needs of diverse students; and (5) involving students, parents, and community members in program planning.

Corporate and Creative Services

26 Worcester Street, Box 303, Boston, MA 02118, (617) 247-8804, e-mail: corpcreate@aol.com. Contact M. Abdul-Hakim Dyer, President. With expertise in the finance industry, community economic development, entrepreneurship, and programming for minority youth, Dyer offers curriculum development assistance and staff development workshops on finance issues, business planning, and approaches to implementing AAI reforms.

Hands and Minds Collaborative

Rindge School of Technical Arts, 459 Broadway, Cambridge, MA 02138, (617) 349-6717. A school-based center, Hands and Minds is dedicated to helping schools and school districts break down the barriers separating vocational and academic education and the barriers separating school and community. The collaborative conducts on-site professional development activities, holds an annual summer workshop, and publishes curriculum samples. Hands and Minds is a joint project of the Center for Law and Education's VOCED Project (see above) and the Rindge School of Technical Arts in Cambridge, which is one of the case studies included in this book.

Jobs for the Future
Jobs for the Future
1815 Massachusetts Avenue
Cambridge, MA 02140
(617) 661-3411
Fax: (617) 661-2799

The Learning Research and Development Center
Martin Nahemow
The Learning Research and Development Center
University of Pittsburgh
Pittsburgh, PA 15250
(412) 624-7925
Fax: (412) 624-9149
e-mail: nahemow@dms.cis.pitt.edu

Northwest Regional Educational Laboratory

Education and Work Program, 101 S.W. Main Street, Suite 500, Portland, OR 97204-3297, (800) 547-6339 or (503) 275-9500. Contact Andrea Baker or Robin Harris. The Education and Work Program assists schools in incorporating AAI into work-based and school-based learning related to preparation for employment. Technical assistance includes workshops on AAI, as well as workshops and written tools on other aspects of program design and implementation.

Curricular Resources and Publications on AAI as a Whole

All Aspects of the Industry: Bringing Industry into the Classroom. The objective of this teleconference, recorded October 12, 1994, was to discuss the merits of AAI. The teleconference provided participants with an orientation to AAI; suggestions about how academies, school-based enterprise, youth apprenticeship, and other program structures can be designed to encompass AAI; strategies for implementing AAI into the classroom; and ways that local and state policies and technical assistance can assist programs in including AAI. This videotape is available from NCRVE–Materials Distribution Service, (800) 637-7652, for $15.

All Aspects of the Industry. Developed by an advisory committee of industry representatives and vocational educators, this curriculum guide gives an employer perspective on important competency objectives and suggests activities for each aspect of industry. This curriculum guide is available for $20 from the Instructional Materials Laboratory, 2316 Industrial Drive, University of Missouri, Columbia, MO 65202, (314) 882-2884 or (800) 669-2465.

Education for All Aspects of the Industry: Overcoming Barriers to Broad-Based Training (MDS-243) by Thomas Bailey, Ross Koppel, and Roger Waldinger. This study looks at one educational reform strategy—all aspects of the industry (AAI)—called for by Perkins II. AAI explores planning, management, finances, technical and production skills, underlying principles of technology, labor and community issues, and environmental issues. The purpose of this report is to help the educational community develop the AAI strategy. Available from NCRVE–MDS at (800) 637-7652 for $9.

Industry-Based Education: A New Approach for School-to-Work Transition (1994) by E. Gareth Hoachlander. Available from MPR Associates, 2150 Shattuck Avenue, Suite 850, Berkeley, CA 94704, (510) 849-4942.

New Directions. Produced by a team of experts as part of the redesign of Boston's Madison Park Vocational-Technical High School, this curriculum guide describes each aspect of industry and explores ways to teach AAI in four academies or clusters: Arts and Communication, Craft and Technical, Commerce, and Health and Human Services. (One section of *New Directions* is reproduced earlier in this book.) Available at cost from the Center for Law and Education, 1875 Connecticut Ave, NW, Suite 510, Washington, DC 20009, (202) 986-3000.

"Teaching Workplace Competencies and All Aspects of the Industry" by Paul Weckstein, published in *Successful Strategies: Building a School-to-Careers System*, which is available from the American Vocational Association, 1410 King Street, Alexandria, VA 22314, (703) 683-3111. This ten-page chapter describes the rationale for AAI, general approaches, and implementation issues. While two of the three examples are case studies in this book, it is a good, short piece to share with other people.

Resources on Small Business Development, Entrepreneurship, and Industry Trends

The Adams Jobs Almanac 1995. Adams Media Corporation, 260 Center Street, Holbrook, MA 02343, (800) 872-5627. The almanac identifies the leading employers in every major U.S. industry (listed by 28 industry categories and by state), including addresses and jobs within each company.

The Business of Small Business, Women Venture, 2324 University Avenue, St. Paul, MN 55114, (612) 646-3808. This self-paced curriculum takes the reader through the steps of developing a business plan, conducting market research and analysis, and the figuring of cash flow.

The Entrepreneur and Small Business Problem Solver: An Encyclopedic Reference and Guide (1990) (2nd ed.) by William A. Cohen, published by John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158-0012, (212) 850-6000. This reference tool covers legal, financial, managerial, and marketing issues.

How To Set Up Your Own Small Business, Vols. I and II (1991) by Max Fallek, published by the American Institute of Small Business, 7515 Wayzata Boulevard, Suite 201, Minneapolis, MN 55426, (612) 545-7001. This reference tool presents the fundamentals of small business establishment and operation.

An Illustrated Guide to the American Economy: A Hundred Key Issues (1992) by Herbert Stein and Murray Foss, published by The AEI Press, 1150 17th Street, NW, Washington, DC 20036, (202) 862-5800.

National Foundation for Teaching Entrepreneurship to Handicapped and Disadvantaged Youth (NFTE), 120 Wall Street, 29th Floor, New York, NY 10005, (212) 232-3333. NFTE offers youth seminars, teacher training workshops, consulting services, a speaker's bureau, curriculum materials, and a newsletter to support entrepreneurship among youth.

Occupational Outlook Quarterly. Published by the Bureau of Labor Statistics of the U.S. Department of Labor, this periodical reports on employment projections and economic trends. Single year subscriptions are $9.50 and can be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954.

REAL Enterprises, 115 Market Street, #320, Durham, NC 27701, (919) 688-7325. REAL is the leading organization supporting school-based enterprises. Primarily a membership organization, REAL provides members with intensive staff development workshops, a four-volume curriculum guide, and ongoing support, including site visits and electronic communication. Their newsletter, *The REAL Story*, is available to nonmembers. Georgia, North Carolina, Oklahoma, South Dakota, Vermont, Virginia, Washington, and West Virginia have REAL offices to support efforts statewide.

School-Based Enterprise: Productive Learning in American High Schools (1994) by David Stern, James Stone III, Charles Hopkins, Martin McMillion, and Robert Crain. Jossey-Bass, 350 Sansome Street, San Francisco, CA 94104, (415) 433-1740. Written for educators, this book describes the role school-based enterprises can play in secondary education, together with descriptions of successful enterprises and practical advice on operating such ventures.

Service Corps of Retired Executives (SCORE). Sponsored by the U.S. Small Business Administration, SCORE's retired executives offer small business counseling free of charge. Contact your local Small Business Administration office.

So, You're Thinking of Having a Business: A Guide To Help You Decide Whether Having Your Own Small Business Makes Sense (1988) by Jonathan Sher. With simple exercises and clear information, this book helps readers decide whether going into business makes sense for them, identifies their interests and assets, and develop business ideas. Originally published by the Small Business and Technology Development Center at the University of North Carolina, it is now available from REAL Enterprises, 115 Market Street, #320, Durham, NC 27701, (919) 688-7325.

Technology, Innovation, and Entrepreneurship for Students (TIES). This monthly magazine describes class activities and is free to technology teachers. Published by Trenton State College, 3 Armstrong Hall, Hillwood Lakes, CN 4700, Trenton, NJ 08650-4700, (609) 771-3333.

Resources on Various Aspects of Industry

Additional Organizations and Technical Assistance Providers

Items in this section are subdivided by particular aspects of industry, beginning with community:

Community

American Planning Association, 122 S. Michigan Avenue, Suite 1600, Chicago, IL 60603-6107, (312) 431-9100, fax: (312) 431-9985. APA's Education Department publishes *Resources* (listed below). APA also publishes *Planning*, a magazine for urban and rural planning professionals. Most states have American Planning Association chapters.

Highlander Research and Education Center, 1959 Highlander Way, New Market, TN 37820, (615) 933-3444. Established in 1932, the Highlander Center offers workshops, publications, videotapes, audiotapes, and internships to better enable people to address social and economic issues, particularly in the South and Appalachia. Publication topics

include deindustrialization and industrial renewal, environmental issues, labor history and rights, and community-led change.

Institute for Southern Studies, P.O. Box 531, Durham, NC 27702, (919) 419-8311. The Institute conducts research and offers publications on the social, political, and economic forces affecting the South. Its quarterly magazine, *Southern Exposure*, investigates current economic, social, and environmental trends and practices. Publication topics include the changing Southern workforce, the labor movement in the South, and Southern industries.

National Congress for Community Economic Development, 1875 Connecticut Avenue, Suite 524, Washington, DC 20009, (202) 234-4510. This organization can refer callers to local community development organizations, which may be interested in involving students in their initiatives. It is also a source for in-depth information on community economic development.

Environment

The Air and Waste Management Association, Public Education Program, One Gateway Center, 3rd Floor, Pittsburgh, PA 15222, (412) 232-3444. The SWMA publishes environmental resource guides, information books, and fact sheets on such topics as pollution, pesticides, landfills, and chemical dumping.

Highlander Research and Education Center, 1959 Highlander Way, New Market, TN 37820, (615) 933-3444. See page R-6.

Institute for Southern Studies, P.O. Box 531, Durham, NC 27702, (919) 419-8311. See top of page.

Finance

National Center for Employee Ownership (NCEO), 1201 Martin Luther King Jr. Way, Oakland, CA 94612, (510) 272-9461. NCEO publishes materials on employee ownership of companies. It also operates a Worldwide Web site with publication excerpts and information (located at http://www.esop.org/~nceo/).

Health and Safety

American Planning Association, 122 S. Michigan Avenue, Suite 1600, Chicago, IL 60603-6107, (312) 431-9100, fax: (312) 431-9985. See page R-6.

Committees on Occupational Safety and Health (COSH). Many states have COSHs, which often have training materials or staff interested in working with educators. For a directory, contact the New York COSH at 275 Seventh Avenue, 8th Floor, New York, NY 10001, (212) 627-3900, or contact the Center for Law and Education's VOCED Project (listed above).

Labor Education Extension Program, Department of Work Environment, University of Massachusetts at Lowell, One University Avenue, Lowell, MA 01854, (508) 934-3250. Contact Charley Richardson, Director. This program focuses on workers' rights, labor law, labor history, and the consequences of new work systems and technologies, as well as the global economy. The Technology and Work Program (at the same location) provides technical assistance, training, and planning resources to help unions participate in decisionmaking as to the use of new technologies and their impact on workers and workplaces. Staff from the programs are available to work with educators on addressing these issues in curricula. Also at the same location is the Kerr Ergonomics Institute, which develops programs and examines ways to promote worker health and improve company productivity.

Labor Occupational Health Program, University of California at Berkeley, 2515 Channing Way, Berkeley, CA 94720, (510) 549-1117. Contact Diane Bush. LOHP tries to reach young workers with information on workplace health and safety. They have developed safety and health curriculum for certain trades.

Office Technology Education Project, One Summer Street, Somerville, MA 02143, (617) 776-2777. The Office Technology Education Project conducts training and publishes fact sheets on office-related health and safety issues, including risks related to computer usage.

Work in America Institute, 700 White Plains Road, Scarsdale, NY 10583-5058, (914) 472-9600. The institute studies workplace issues to explore how organizations can become more competitive and profitable, while improving the duties of all employees.

While written for policymakers and corporations, some publications may serve as useful references on emerging changes in the workplace such as the transition to high-performance work organizations.

Labor

California Federation of Teachers Labor in the Schools Committee, One Kaiser Plaza, Suite 1440, Oakland, CA 94612, (510) 832-8812. The committee publishes a resource guide (listed below), develops curricular materials, and assists California educators in identifying labor resources.

Highlander Research and Education Center, 1959 Highlander Way, New Market, TN 37820, (615) 933-3444. See page R-6.

Institute for Southern Studies, P.O. Box 531, Durham, NC 27702, (919) 419-8311. See page R-7.

Labor Education and Research Center, University of Oregon, 722 S.W. Second Avenue, Portland, OR 97204, (503) 725-3296. Contact Barbara Byrd.

Labor Education Extension Program, Department of Work Environment, University of Massachusetts at Lowell, One University Avenue, Lowell, MA 01854, (508) 934-3250. Contact Charley Richardson, Director. See page R-8.

Labor Studies Program, University of Massachusetts at Boston, Harbor Campus, Boston, MA 02125, (617) 287-7354. Contact Jim Green, Director. Having consulted with Boston Public Schools and Cambridge's Rindge School of Technical Arts on integration labor studies, Dr. Green is available to assist in program design and staff and curriculum development.

Massachusetts Department of Public Health, Bureau of Health Statistics, Research, and Evaluation, 250 Washington Street, 6th Floor, Boston, MA 02108, (617) 624-5625. Contact Robin Dewey. The bureau is conducting a two-year demonstration project on educating youth in school-to-work programs about health and safety issues and will produce a guide as part of this Protection Young Workers Project. The bureau is also producing a health and safety video for youth.

National Center for Employee Ownership (NCEO), 1201 Martin Luther King Jr. Way, Oakland CA 94612, (510) 272-9461. See page R-7.

University and College Labor Education Association. Members are labor educators across the country, some of whom may be interested in working with vocational and academic teachers. A directory of members is available from Howard Harris, Labor Sides and Industrial Relations, Pennsylvania State University, 3550 Seventh Street, New Kensington, PA 15068, (412) 339-5440.

Workers' Education Local 189—Members are labor educators, researchers, and historians, many of whom are interested in working with high school teachers on integrating labor studies. Contact Charles Micallef, President of Local 189, 864 Clarks Landing Road, Hollywood, MD 20636, for members in your area.

Management

National Center for Employee Ownership (NCEO), 1201 Martin Luther King Jr. Way, Oakland CA 94612, (510) 272-9461. See page R-7.

Work in America Institute, 700 White Plains Road, Scarsdale, NY 10583-5058, (914) 472-9600. See page R-8.

Planning

American Planning Association, 122 S. Michigan Avenue, Suite 1600, Chicago, IL 60603-6107, (312) 431-9100, fax: (312) 431-9985. See page R-6.

Center for Understanding the Built Environment (CUBE), 5328 W. 67th Street, Prairie Village, KS 66208, (913) 262-0691. CUBE publishes curriculum on city development, architecture, and historic preservation, as well as *Archisource*, a newsletter reporting on curricular materials.

Labor Education Extension Program, Department of Work Environment, University of Massachusetts at Lowell, One University Avenue, Lowell, MA 01854, (508) 934-3250. Contact Charley Richardson, Director. See page R-8.

National Center for Employee Ownership (NCEO), 1201 Martin Luther King Jr. Way, Oakland CA 94612, (510) 272-9461. See page R-7.

National Congress for Community Economic Development, 1875 Connecticut Avenue, Suite 524, Washington, DC 20009, (202) 234-4510. See page R-7.

Work in America Institute, 700 White Plains Road, Scarsdale, NY 10583-5058, (914) 472-9600. See page R-8.

Underlying Principles of Technology

Cambridge Physics Outlet (CPO), 10 Green Street, Building E, Woburn, MA 01801, (800) 932-5227. CPO produces low-cost, hands-on equipment for teaching science, math, and technology in a way that is both fun and academically rigorous. Used at the Rindge School of Technical Arts, CPO equipment is designed by teachers and the Massachusetts Institute of Technology scientists and is appropriate for elementary grades through college. CPO also offers professional development workshops.

Labor Education Extension Program, Department of Work Environment, University of Massachusetts at Lowell, One University Avenue, Lowell, MA 01854, (508) 934-3250. Contact Charley Richardson, Director. See page R-8.

Written Materials, Curricula, and Videos

Note: Some of these were written for educators, some for students, and some for professionals. We have included a mix, so that even when curriculum materials are not available, educators can find resources to educate themselves about the subject. As with the previous section, titles are subdivided by the aspect of industry.

Community

Community Economic Development Strategies: A Manual for Local Action (1987). University of Illinois at Chicago Center for Urban Economic Development, 400 S. Peoria, Suite 2100, Chicago, IL, 60607, (312) 996-6336. This manual describes different strategies for the creation and retention of local jobs and needed goods and services and includes an excellent listing of community economic development resources. It is aimed at helping people interested in community economic development to understand and select appropriate strategies to achieve their goals.

Dilemmas of Development (1990). Based on a suburban office park development project, this simulation is designed to help students understand general land use and community planning issues, principles, and processes. Students take on roles of developer, land use attorney, planners, and public officials. The package includes a teacher's guide, background information, simulation materials, supplemental activity suggestions, and a video of the Virginia development upon which the simulation is based. Available from the Urban Land Institute, 625 Indiana Avenue, NW, Washington, DC 20004-2930, (800) 321-5011, for $49.95.

Making It Ourselves: A Primer on Women's Housing and Business Development (2nd ed.). Women's Institute for Housing and Economic Development, 179 South Street, Boston, MA 02111. $15.00. Drawing on women's economic development efforts, this book guides the reader through housing development and business venture development with clear explanations of planning, finance, and management tasks and issues, with a particular emphasis on the context of community economic development and the goal of creating new roles for women.

Race, Poverty, and the Environment. Earth Island Institute, 300 Broadway, Suite 28, San Francisco, CA 94133-3312, (415) 788-3666. In addition to publishing this periodical, Earth Island Institute operates an Urban Haiti program focusing on environmental and social justice issues, including military base conversions, transportation, urban greening, and marine education.

Resources. This free quarterly newsletter describes materials and strategies for involving students in the study of the natural, built, and cultural environment. From the American Planning Association, 122 S. Michigan Avenue, Suite 1600, Chicago, IL 60603-6107, (312) 431-9100, fax: (312) 431-9985. Back issues are available.

Sowing the Seeds of Economic Renewal (1986). Corporation for Enterprise Development, 777 N. Capitol Street, Suite 801, Washington, DC 20002, (202) 408-9788. This handbook shows how to conduct a systematic assessment of a community's resources, problems, opportunities, and challenges. Although designed for use in the face of plant closings, it is relevant for any community economic analysis. Chapters 1 and 2 are particularly useful in describing the fundamental questions and methodology for community economic assessment.

A Teacher's Guide to Community-Based Economics (1988). Highlander Research and Education Center, 1959 Highlander Way, New Market, TN 37820, (615) 933-3444.

UrbanPlan (1991). This simulation of urban redevelopment issues helps students understand land use and community planning issues, principles, and processes. Students work in competing development company teams to respond to a mock Request for Proposals issued by a hypothetical city. The package includes a teacher's guide, the mock Request for Proposals, a planning and land use map, a glossary, and a video of the Kansas City redevelopment project upon which the simulation is based. Available from Urban Land Institute, 625 Indiana Avenue, NW, Washington, DC 20004-2930, (800) 321-5011, for $54.95.

Working Neighborhoods: Taking Charge of Youth Local Economy. This special issue of *The Neighborhood Works* monthly newsletter offers a concise explanation of the neighborhood as an economic unit. Center for Neighborhood Technology, 2125 W. North Avenue, Chicago, IL 60647, (312) 278-4800.

Environment

Eco-Video Collection for Schools. The collection includes videos on such subjects as global warming, conservation of natural resources, and energy conservation. You can request a catalog from The Video Project, 5332 College Avenue, Suite 101, Oakland, CA 94618, (800) 475-2638.

EPA Journal. The journal can serve as a resource for discussions and research. *EPA Journal* (A-107), Waterside Mall, 401 M Street, SW, Washington, DC 20460.

Growing Greener Cities, Global Relief by Gary Moll and Stanley Young. Living Planet Press, 558 Rose Avenue, Venice, CA 90291-2606, (310) 396-0188. Distributed by Publishers Group West, P.O. Box 8843, Emeryville, CA 94662, (800) 788-3123, fax: (510) 658-1834.

The No Waste Anthology. A teacher's guide to environmental activities for K-12 on such topics as natural resources and pollution, solid waste, and hazardous waste. Single copies available free from the California Department of Toxic Substances Control, Education

and Information Unit, P.O. Box 806, Sacramento, CA 95812-0806, (916) 324-3614, fax: (916) 327-0978. Contact Judi Frantz.

Race, Poverty, and the Environment, published by Earth Island Institute, 300 Broadway, Suite 28, San Francisco, CA 94133-3312, (415) 788-3666. See page R-12.

Resources. American Planning Association, 122 S. Michigan Avenue, Suite 1600, Chicago, IL 60603-6107, (312) 431-9100, fax: (312) 431-9985. Back issues are available. See page R-12.

Water, Water Everywhere. A teaching package for grades 7-12, this includes a teacher's guide, student reading and resource materials, field exercises, and worksheets. Hach Company, P.O. Box 608, Loveland, CO 80539-0608, (800) 227-4224, fax: (303) 669-2932.

Finance

Business Planning Guide: A Handbook To Help You Design, Write and Use a Business Plan and a Financing Proposal (7th ed.). Upstart Publishing Co./Dearborn Financial Publishing, 155 N. Wacker Drive, Chicago, IL 60606, (312) 836-4400. This manual emphasizes planning for small retail enterprises.

The Consumer Guide to the Stock Market (1993) by Marsha Bertrand. United Resource Press, 4521 Campus #388, Irvine, CA 92715. ISBN 0-929230-13-2.

Finance for the Non-Financial Manager (1988) by Herbert T. Spiro. John Wiley & Sons, Inc., 605 Third Avenue, New York, NY 10158-0012, (212) 850-6000.

Finance Without Fear (1984), by James E. Kristy and Susan Z. Diamond. American Management Association, 135 W. 50th Street, New York, NY 10020. ISBN 0-8144-577-2. For AMA publications, call (800) 262-9699.

How To Read Between the Lines: Getting More Out of the Wall Street Journal. (1993). Dow Jones Educational Service Bureau, sponsored by Charles Schwab and Co.

A Manager's Complete Guide to Financial Techniques (1982) by George Aragon. The Free Press, London, England. ISBN 0-02-900820-4.

Making It Ourselves: A Primer on Women's Housing and Business Development (2nd ed.). Women's Institute for Housing and Economic Development, 179 South Street, Boston, MA 02111. $15. See page R-12.

Health and Safety

Protecting Working Teens: A Public Health Resource Guide. Children's Safety Network, Education Development Center, 55 Chapel Street, Newton, MA 02158. This 63-page booklet presents strategies for prevention and education about on-the-job injuries to adolescents and contains information on sources of work injury data, agencies and organizations involved in the issue, selected readings and resources, and a summary of child labor laws.

Labor

AFL-CIO Education Department. Curricula, lessons plans, and videos for sale and rental. Call (202) 637-5143. The Massachusetts AFL-CIO has published *A Resource Guide to Labor Education for Secondary School Teachers*. For ordering information, call (617) 227-8260.

American Social History Project. (212) 772-4129. This project has produced an excellent series of short labor history videos—animated and specifically designed for secondary schools. Each video includes a viewer's guide. The project has also published a two volume text, *Who Built America? Working People and the Nation's Economy, Politics, Culture and Society* (paperback from Pantheon).

Bringing Labor into the K-12 Curriculum: Resource Guide for Teachers. California Federation of Teachers, Oakland Office, One Kaiser Plaza, Suite 1440, Oakland, CA 94612, (510) 832-8812. This twelve-page resource guide lists curricula, exemplary programs, audiovisual resources, learning activities, and readings. It also includes a section on cultural diversity in unions and the workforce. Revised annually.

The California Working Group, Inc., 5867 Ocean View Drive, Oakland, CA 94618, has produced an educational group of videos about contemporary workers' issues. For

information, call (510) 547-8484, or e-mail wedothework@igc.apc.org. This group also produced a public television series called *We Do the Work*.

Labor in the Schools: Teaching the Workers of Tomorrow About Unions Today. This free, occasional newsletter is published by the California Federation of Teachers, Labor in the Schools Committee, One Kaiser Plaza, Suite 1440, Oakland, CA 94612, (510) 832-8812.

Labor Research and Review. The Midwest Center for Labor Research publishes this journal of research and opinion, as well as other relevant materials. MCLR, 3411 W. Diversey Avenue, Chicago, IL 60647, (312) 278-5418

Looking Forward: Participatory Economics in the 21st Century (1991) by Michael Albert and Robin Hahnel. South End Press, 116 Saint Botolph Street, Boston, MA 02115. While fairly political, this book on participatory/cooperative management can generate a lively class discussion. Some teachers assign only the first chapter.

The Overworked American: The Unexpected Decline of Leisure (1991) by Juliet B. Schor. BasicBooks/HarperCollins, 10 E. 53rd Street, New York, NY 10022-5299. A big seller in all the bookstores, this book examines work time in the United States.

A People's History of the United States by Howard Zinn. Available from the Network of Educators on the Americas, 1118 22nd Street, NW, Washington, DC 20037, (202) 429-0137. With sales of over 200,000, this unique history focuses on workers, women, minorities, and indigenous people.

The Power in Our Hands: A Curriculum on the History of Work and Workers in the United States (1988) by William Bigelow and Norman Diamond. Monthly Review Press, 122 W. 27th Street, New York, NY 10001, (212) 691-2555. It is also available from the Network of Educators on the Americas, 1118 22nd Street, NW, Washington, DC 20037, (202) 429-0137. This high school curriculum includes lesson plans, role plays, discussion questions, and reading assignments, and is widely regarded as the best labor curricula for the secondary school level.

Public Broadcasting System, (800) 344-3337, has produced several excellent labor history videos for sale to educational institutions, including *The Great Depression* (a seven-part series), *Los Mineros* (about Latin copper miners in Arizona), *Iron Rail* (about the railroad industry), and *Sit Down and Fight: Walter Reuther and the Rise of the Auto Workers Union*.

The World of the Worker: Labor in Twentieth-Century America (1980) by James R. Green. Hill and Wang, New York, NY. Recently reissued, this book can be ordered through local bookstores.

Management

Business Planning Guide: A Handbook To Help You Design, Write and Use a Business Plan and a Financing Proposal (7th ed.). Upstart Publishing Co./Dearborn Financial Publishing, 155 N. Wacker Drive, Chicago, IL 60606, (312) 836-4400. This manual emphasizes planning for small retail enterprises.

Finance Without Fear (1984) by James E. Kristy and Susan Z. Diamond, American Management Association, 135 W. 50th Street, New York, NY 10020. ISBN 0-8144-577-2. For AMA publications, call (800) 262-9699.

Games Trainers Play: Experiential Learning Exercises (1980) by John Newstrom and Edward Scannell. McGraw-Hill, Blue Ridge Summit, PA 17294-0859. Sequels are also available: *More Games Trainers Play* and *Still More Games Trainers Play*.

Looking Forward: Participatory Economics in the 21st Century (1991) by Michael Albert and Robin Hahnel. South End Press, 116 Saint Botolph Street, Boston, MA 02115. See page R-16.

A Manager's Complete Guide to Financial Techniques (1982) by George Aragon. The Free Press, London, England. ISBN 0-02-900820-4.

Making It Ourselves: A Primer on Women's Housing and Business Development (2nd ed.). Women's Institute for Housing and Economic Development, 179 South Street, Boston, MA 02111. $15. See page R-12.

Planning

Business Planning Guide: A Handbook To Help You Design, Write and Use a Business Plan and a Financing Proposal (7th ed.), Upstart Publishing Co./Dearborn Financial Publishing, 155 N. Wacker Drive, Chicago, IL 60606, (312) 836-4400. This manual emphasizes planning for small retail enterprises.

Dilemmas of Development (1990). Available from Urban Land Institute, 625 Indiana Avenue, NW, Washington, DC 20004-2930, (800) 321-5011, for $49.95. See page R-12.

Making It Ourselves: A Primer on Women's Housing and Business Development (2nd ed.). Women's Institute for Housing and Economic Development, 179 South Street, Boston, MA 02111. $15. See page R-12.

Planning for Local Economic Development (1994) (2nd ed.) by Edward Blakely. Sage Publications, 2455 Teller Road, Thousand Oaks, CA 91320, (805) 499-0721. $24.00, paperback. Written for the in-depth study of economic development, this textbook presents the basic tools and techniques for economic development.

UrbanPlan (1991). Available from Urban Land Institute, 625 Indiana Avenue, NW, Washington, DC 20004-2930, (800) 321-5011, for $54.95. See page R-13.

The YouthBuild Bulletin. YouthBuild USA, the national organization of YouthBuild programs, 58 Day Street, P.O. Box 440322, Somerville, MA 02144, (617) 623-9900. This periodical includes information on programs involving students in community economic development efforts as part of a learning strategy.

Additional Suggestions

Resources explicitly about AAI are limited. However, educators can also look to universities and other sources of expertise and assistance. Universities' business schools, planning schools, and labor studies departments are likely places to find curricular materials (though they may need to be adapted), professional development opportunities, *and faculty interested in collaborating with high school educators*. For instance, *the University and College Labor Education Association* and *Workers' Education Local 89*

(both of which are listed above in organizational resources on particular aspects of industry) can refer you to local labor studies departments and educators.

Most cities and many other localities have community development corporations (CDCs), which are dedicated to improving the local economy and providing opportunities for residents of low- and moderate-income communities. Educators may want to partner with local CDCs to provide opportunities for students to learn about community economic development and gain experience in particular industries (e.g., construction, child care, environmental design, and so on). *The National Congress for Community Economic Development* (listed above under organizational resources on particular aspects of industry) can provide information on the CDCs in specific localities.

Local and state environmental organizations such as *Sierra Club* chapters can sometimes provide leads to local resources.

Many schools use the *Wall Street Journal*, the *New York Times*, *Business Week*, and other newspapers and magazines. Other journals that may contain ideas are *Hispanic Business* (a journal which covers business and finance issues of particular interest to Hispanic individuals), *Black Enterprise* (a journal which addresses issues facing entrepreneurs of color), and *CFO* (a journal which examines finance issues in a generally straightforward and accessible way).

Rethinking Schools is an independent, quarterly journal committed to public school reform and promoting equity and social justice. Published by educators, it includes teaching ideas, resource listings, and analyses of educational issues. A 1994 special issue, "Rethinking Our Classrooms: Teaching for Equity and Justice," includes articles by teachers and researchers on innovative teaching practices and resource ideas. Published by Central Region Wisconsin Rethinking Schools, 1001 E. Keefe Avenue, Milwaukee, WI 53212, (414) 964-9646.

Complementary Education Reform Organizations

The Coalition of Essential Schools

The Coalition of Essential Schools (CES) began in response to a study conducted from 1979 to 1984 that identified the problems of American secondary education as well as key imperatives for better schools. Based on the findings of this study, CES sought to move away from the "shopping mall high school" model of schooling, which, in intending to appeal to the individual interests of students, often fell short on academic rigor. It aimed to reform schools in order to hold all students to higher academic standards, to motivate students to become more actively involved in the learning process, and to move away from conventional tracking systems that placed students according to ability or interest.

The CES member schools are diverse and include suburban, urban, rural, public, independent, parochial, vocational, last resort, middle, and high schools. Although the schools that form the CES vary in size, location, and focus, they base their program on a set of shared, common *guiding principles.* These guiding principles do not prescribe a program but rather serve as a framework to guide restructuring efforts. Participating schools actively agree with the principles and work with them to change the traditional roles of students and staff, interpreting and prioritizing them as they see fit for their population. CES advocates restructuring schools from the bottom up because it believes that there is no recipe for reform—all schools are different, as are the populations with which they work; long-lasting reform is created through faculty- and school-driven efforts focused on the guiding principles. The change process, consequently, unfolds incrementally over a long period of time as schools redefine the conventional roles of every individual in the school, including those of the student, teacher, administrator, principal, and other staff. Schools working through the guiding principles, in the deepest way possible, undergo a whole-school restructuring process that can often be messy and tiresome, but reportedly very worthwhile in the long run, as evidenced by both student achievement and teacher empowerment.

CES hopes that its guiding principles will serve as the beginning of conversation for change within schools and help spawn comprehensive schoolwide programs. The guiding principles have been defined by CES as follows:

- The school should focus on helping adolescents to *learn to use their minds well.* Schools should not attempt to be "comprehensive" if such a claim is made at the expense of the school's central intellectual purpose.

- The school's goals should be simple: that each student *master a limited number of essential skills and areas of knowledge.* While these skills and areas will, to varying degrees, reflect the traditional academic disciplines, the program's design should be shaped by the intellectual and imaginative powers and competencies that students need, rather than necessarily by "subjects" as conventionally defined.

- The school's goals *should apply to all students,* while the means to these goals will vary as those students themselves vary. School practice should be tailor-made to meet the needs of every group or class of adolescents.

- *Teaching and learning should be personalized* to the maximum extent feasible. Efforts should be directed toward a goal that no teacher have direct responsibility for more than 80 students. To capitalize on this personalization, decisions about the details of the course of study, the use of students' and teachers' time, and the choice of teaching materials and specific pedagogies must be unreservedly placed in the hands of the principal and staff.

- *The governing practical metaphor of the school should be student-as-worker* rather than the more familiar metaphor of teacher-as-deliverer-of-instructional-services. Accordingly, a prominent pedagogy will be coaching, in order to provoke students to learn and, thus, to teach themselves.

- Students entering secondary school studies are those who can show competence in language and elementary mathematics. Students of traditional high school age but not yet at appropriate levels of competence to enter secondary school studies will be provided with intensive remedial work to assist them in meeting those standards. The *diploma should be awarded upon a successful, final demonstration of mastery* for graduation—an exhibition. This exhibition by the student of his or her grasp of the central skills and knowledge of the school's program may be jointly administered by the faculty and by higher authorities. As the diploma is awarded when earned, the school's program proceeds with no strict age grading

and with no system of "credits earned" by "time spent" in class. The emphasis is on the students' demonstration that they can do important things.

- *The tone of the school* should explicitly and self-consciously stress values of *unanxious expectation*, *trust*, and *decency*. Incentives appropriate to the school's particular students and teachers should be emphasized, and parents should be treated as essential collaborators.

- *The principal and teachers should perceive themselves as generalists first* (teachers and scholars in general education) and specialists second (experts in only one particular discipline). Staff should expect multiple obligations (teacher-counselor-manager) and have a sense of commitment to the entire school.

- Ultimate administrative and budget targets should include, in addition to *total student loads per teacher of eighty or fewer pupils, substantial time for collective planning by teachers, competitive salaries for staff, and an ultimate per pupil cost not to exceed that of traditional schools by more than 10%*. To accomplish this, administrative plans may have to show the phased reduction or elimination of some services now provided in many traditional secondary schools.

What do these guiding principles look like in practice? The list of guiding principles focuses on reforming both the relationship and role of teachers and students, and the issues of teaching and learning. In addition, the principles emphasize school structure in order to facilitate these changes. Teachers need the autonomy to design the types of activities they see fit for their classes; and students need to take an active role in learning as their teachers coach them through the process. Although the principles may look different in each school, common practices include team teaching, project-based/thematic curriculum, integrated subjects, block scheduling, and performance-based assessment. While some of the member schools are either vocational, designed around themes, or more traditional in structure, they share a common focus on a rigorous academic curriculum.

As the principles are intended to guide teachers' thinking rather than present a recipe or model for the "ideal school," CES emphasizes that there is, in fact, no ideal CES school. CES schools are ever-evolving, incorporating each of the guiding principles to varying degrees as the needs of the students change. A strong CES network provides

member schools with outside coaches who can assist in the implementation of the CES guiding principles. The CES schools network with one another through forums, e-mail, and "critical" friends.

While CES has defined itself as primarily focused on *academic* school reform—intending to boost the academic achievement of *all* students—its framework of principles and frequent program components fit comfortably with a broadly conceived school-to-work philosophy. The very principles of Student-as-Worker, Teacher-as-Coach, and Graduation by Exhibition of Mastery are upheld in the most successful and progressive vocational programs, including career academies, magnets, school-based enterprises, co-op programs, and youth apprenticeship programs. Both the CES and the school-to-work advocates take a distinctly Deweyan approach to schooling by placing project-based and experiential learning connected to the "real world" at their core.

For further information on The Coalition of Essential Schools, please contact

The Coalition of Essential Schools
Box 1969, Brown University
Providence, RI 02912
(401) 863-3384

Center for Collaborative Education

The Center for Collaborative Education (CCE) is a partner to the Coalition of Essential Schools in representing the New York City Coalition schools. The two groups do differ slightly both in organizational practice and guiding principles. When schools join CCE, they agree to participate in organizational decisions—for example, each school takes part in accepting new members to the CCE and in determining future directions CCE will take. Thus, the member schools are the critical decisionmakers for the policies set. Additionally, in looking at CCE's twelve guiding principles, a tremendous overlap can be seen with the guiding principles of CES, but also a few differences. All CCE schools are committed to the following:

1. Schools that are small and personalized

2. A unified course of study for all students; a common high standard for all

3. A focus on helping young people to use their minds well and to be critical thinkers and doers

4. An in-depth, intradisciplinary curriculum respectful of our diverse heritages

5. Active learning: student-as-citizen and teacher-as-coach

6. Student evaluation and graduation based on performance-demonstrated mastery

7. A school tone of unanxious expectation, trust, and decency

8. Family involvement and mutual respect

9. Collaborative decisionmaking and governance

10. Choice: Everyone is a willing partner to the school community

11. Racial, ethnic, economic, and intellectual diversity

12. Budget allocations targeting time for collective planning

The member schools of CCE are small schools of choice and, thus, students, usually with their families, decide which school they would like to attend. The schools have been afforded a number of exemptions and flexibilities by the Board of Education (e.g., waivers from Regents—New York statewide, standardized exams). In a typical school day, students spend their time in seminars analyzing, problem solving, discussing, researching, and writing about a variety of topics. The classes typically last longer than one hour and students work in collaborative research teams demonstrating their knowledge through presentations, debates, dramas, videos, speeches, and portfolios. In addition, much learning takes place off-campus where students take courses, work at local community agencies, and intern with leaders from the private and public sectors.

In 1992, CCE established the Coalition Campus Schools Project in New York City. This project is a three-year initiative to start new, small junior high and high schools (7-12) by phasing out existing comprehensive high schools. In the first year of the project, a comprehensive high school in Manhattan was closed to create six smaller Coalition Campus Schools, each of which was founded on CCE's twelve guiding principles. Unlike other restructuring efforts that break down large comprehensive high schools into smaller educational units (e.g., houses, charters, academies, and so on), the Coalition Campus Schools Project has taken a student body at a large school and has placed them in several cohorts in separate new schools around the city. These smaller

schools are home-grown and focus on meeting the needs of their student body. The Coalition Campus Schools adhere to the same practice and principles defined by CCE.

For further information about the Center for Collaborative Education, please contact

The Center for Collaborative Education
1573 Madison Avenue, Room 201
New York, NY 10029
(212) 348-7821

Service-Learning Programs

Similar to school-to-work transition, service learning is a movement that has field-based learning and connections to the community at its core in order to provide students with fulfilling and challenging academic learning experiences. Service-learning programs are used in a variety of schools ranging from vocational to CES schools to career academies. Service-learning programs grew out of the need to better prepare students as productive and active adult citizens in a variety of settings. Unlike the peripheral after-school community service programs that have been in operation for years, service learning redefines the ways in which teachers, students, and the community interact during the educational process. Service learning uses service as a Deweyan, experiential, pedagogical means to enhance students' academic learning. Through service learning, students apply the knowledge they gain in their courses to address real-life issues in the community. Those real-life community issues become the focal point around which the course curriculum is based. In addition, students provide a welcomed benefit to their local community, as they apply their course content to real situations that help them to better understand the importance and relevance of the course content they are learning.

In classrooms that utilize service learning, teachers use time flexibly and emphasize reflection. It is during this reflection time that students analyze the service they performed and assess how their school learning assisted in addressing a community issue. Thus, the role of the teacher changes from director to guide, much in the same way the CES sees the teacher's role as that of a "coach." No longer is the teacher solely responsible for students' learning—the responsibility is shared among the teacher, students, and the community. Likewise, the students' role changes to that of "student as worker." Students no longer just follow directions, listen passively, and receive

knowledge; instead, they discover knowledge by actively directing themselves through learning activities.

Given the rich array of communities and schools that exist, the structure and nature of programs that engage their students in service learning vary from school to school. While some service-learning programs are school-based—the service opportunities in which students are engaged are coordinated by the school—others are coordinated by either a community-based agency or by the agency that offers the service (sponsor-based). Regardless of which institution serves as the coordinating agent, service is always integrated with one or more of the school's curricular courses.

Despite their programmatic idiosyncrasies, all successful service-learning programs are based on several common experiential education principles similar to those espoused by CES and CCE:

- *Concrete Service Experiences*
  Regardless of whether students serve at the school or in the community, effective service-learning programs engage students in concrete experiences in which the students are actively involved in real and meaningful situations. Students are not just learning about their surrounding world by passively reading or hearing about it; they are learning about their world by actively attempting to understand why things are the way they are.

- *Reflection*
  All effective serving-learning programs provide students with an opportunity to conduct reflective observations of their service work. Students reflect upon and analyze their service to help prompt memory of what happened and why.

- *Synthesis*
  Service-learning programs also help students formulate theories about why an experience happened as it did. Students attempt to explain why particular situations exist. They use their academic and personal knowledge to devise a viable plan for ameliorating undesirable situations in the world around them. It is this higher-level abstract concept-making synthesis that sets service-learning apart from community service, volunteer, and other service programs.

- *Active Experimentation*
  Students are given supervised opportunities to test out a theory by carrying into action their ideas for ameliorating situations in their communities. They implement their plan(s) and assess their impact on the intended situation.

Similar to the coalitions established by CES and CCE, service learning has established a series of program networks that facilitate the exchange of resources and information among programs such as The National Center for Service Learning and Social Change. Most of these networks are regional and focus on local community needs. Efforts are currently underway to develop statewide and national networks that provide support to local schools in the implementation and development of service-learning programs.

For more information on service-learning programs, please contact any of the following:

Don Hill, Director
Service Learning 2000
50 Embarcadero Road
Palo Alto, CA 94301
(415) 322-7271
(Provides services only in California)

Service Learning Clearinghouse
University of Minnesota
1954 Buford Avenue, Room 290
St. Paul, MN 55108
(800) 808-7378
URL: http://www.nicsl.coled.umn.edu

Foxfire

Foxfire began with the ideas of Eliot Wigginton, who was challenged to engage his adolescent students in Rabun Gap, Georgia, in their schooling. Influenced by John Dewey, he believed that projects that involved students in learning academic skills through studying their culture and community would engage students. Through the establishment of a school magazine, titled *Foxfire*, which focused on the folklore of rural Appalachia, students gained a sense of their cultural identity while learning academic skills. Since its inception, *Foxfire* has grown into far more than a magazine; *Foxfire* has become a pedagogy for teachers regardless of the subject matter they teach. Foxfire classes now take the form of cultural journalism, science, math, and various interdisciplinary courses. In addition, Foxfire advocates that schools focus on the

individual development of each student. Thus, teachers need to work with students to continually evaluate their experiences in order to understand how the lessons they have learned can be applied in a variety of arenas.

Foxfire is similar to service learning and school-to-work transition in that connecting students to their communities is at the core of its framework. However, unlike the aforementioned programs, which focus on whole school change, Foxfire has focused its efforts on effective classroom change. Through its 22 teacher networks around the country, Foxfire provides teachers with outreach and technical assistance in instituting classroom strategies for effective teaching. Like the Coalition of Essential Schools and the Center for Collaborative Education, Foxfire is based on a series of principles, or set of core teaching practices. In general, Foxfire teachers aim to help students take full responsibility for their learning, and to develop projects and curriculum around students' interests. These practices are similar to those utilized in service-learning programs where the focus is on the active engagement of students in meaningful, collaborative, real-world learning experiences with an emphasis on reflection. The following are Foxfire's core teaching practices:

- *All the work the teachers and students do together must flow from student desire, student concerns*. Curriculum must be infused from the beginning with student choice, design, revision, execution reflection, and evaluation. Students are challenged to answer their own questions and are led to a point where they embrace responsibility.

- *The role of the teacher must be that of collaborator, team leader, and guide* rather than boss. Teachers have the responsibility of monitoring the academic and social growth of each student. They are expected to model the types of attitudes that they hope to develop in their students.

- *The academic integrity of the work must be absolutely clear*. Each teacher must embrace state—or local—mandated skill content lists as "givens" to be engaged by the class, and accomplish them to the level of mastery in the course of executing the class's plans, but go far beyond their normally narrow confines to discover the value and potential inherent in the content area being taught and its connections to other disciplines.

- *Work is characterized by student action*, rather than by the student being the recipient of processed information. Rather than students doing what they already know how to do, all students must be led continually into new work and unfamiliar territory. Once skills are "won," they must be reapplied to new problems in new ways. Students must be made to realize that mistakes are not considered failures but, rather, they are considered platforms from which to learn more.

- *Emphasize peer teaching, small group work, and teamwork*. Students help one another and in doing so recognize a place for themselves in the classroom—the goal is that students come to see themselves as "needed" and discipline problems cease to be an issue.

- *Connections between the classroom work, surrounding communities, and the real world outside the classroom are clear*. The content of all courses is connected to the world in which the students live. The process should help students to learn more about and identify with their communities.

- *There must be an audience beyond the teacher for student work*. The audience can be another individual, a small group of people, the community, and so on. The only requirement is that it be an audience which the students hope to serve, engage, or impress.

- *New activities should spiral gracefully out of old*, incorporating lessons learned from past experiences, building on skills and understandings that can now be amplified. A finished product is never finished, per se, but rather regarded as a starting point for a new lesson.

- *Acknowledge the worth of aesthetic experience*—create situations that encourage students to use their imaginations.

- *Reflection*—some conscious, thoughtful time to stand apart from the work—reflection evokes insights and nurtures revisions.

- *The work must include unstintingly honest, ongoing evaluation for skills and content, and changes in attitude*. A variety of strategies should be employed, including pre- and posttesting, simple memory tests, and complex instruments

involving student participation in the creation of demonstrations that answer the teacher challenge. Students should learn to monitor their own progress and devise their own remediation plans.

Similar to the CES approach, these core teaching practices are intended to establish a framework by which teachers can review their practices and discover ways to revise, rather than be a prescriptive recipe. Given the close alignment of Foxfire's practices with the principles of CES, the two programs have formed a partnership of collaboratively run training sessions through a joint network.

While Foxfire may look different within each classroom in which it is used, each Foxfire teacher places student ownership of learning at the forefront of the class, as well as in developing class content and assignments. For example, often a Foxfire teacher will present a set of "givens" to his or her students—knowledge or skills that they must develop by the end of the course or a segment of the course. As a class, the students define the ways in which they wish to achieve those givens, identify places in their community where they could learn more about those ideas, or create exciting assignments in which they take an active role.

Foxfire teachers attend intense training sessions that focus on the development of expertise in the Foxfire core teaching practices. The workshops use an active teaching approach whereby teachers are asked to role play as students. New teachers are especially encouraged to attend the workshops, learn to utilize the core teaching practices, and become Foxfire teachers.

As with vocational programs that focus on developing students' understanding of all aspects of an industry, the central idea of Foxfire is that students should experience all aspects of a project, whatever project that might be. For example, when Wigginton first began Foxfire as a cultural journalism class in Rabun Gap, he had students participate in all aspects of magazine production. Not only did they write the stories and take the photographs, they developed the film, designed the layout, controlled the budget, and gathered advertisements. Because the magazine was published quarterly by Random House, students had concrete deadlines to meet. In the beginning, these deadlines detracted from the academic rigor of the Foxfire program—the product drove the academic agenda. When it became apparent that the program focused too much on the

affective side of learning and technical skills, Wigginton worked through the problem and redefined the aspects of the program with his staff.

Foxfire is now a program in which students learn skills considered to be both academic and job-related; students leave high school with a set of marketable abilities for both higher education and work. Foxfire classes introduce students to a variety of career options while focusing on an academic curriculum. Students from Wigginton's original cultural journalism class who did not go on to pursue careers in journalism reported that they acquired several other useful skills necessary to getting other types of jobs. For example, one young woman commented on the business skills she learned in producing the magazine in order to begin her own housekeeping business. In addition, Foxfire students, in general, learn a great deal about their own culture, a goal which Wigginton emphasizes in hopes of empowering students and helping them to feel as though the material which they studied in school was in fact their own—with personal meaning and value.

For more information about Foxfire, please contact

Foxfire
P.O. Box 541
Mountain City, GA 30562
(706) 746-5318

REAL Enterprises

School Incubated Enterprise Programs

Rural Entrepreneurship through Action Learning (REAL) programs are similar to many of the experiential programs already described. Based on the writings of Jonathan P. Sher, REAL was originally created to enhance rural development by providing high school or college graduates with a reason to remain or return to the areas in which they grew up. By helping students develop school-incubated enterprise programs, REAL hoped to highlight untapped economic opportunities in communities currently lacking enticing possibilities for employment. REAL has expanded its program beyond rural areas and now works with inner-cities—especially for those with an obvious disinvestment of resources and deterioration of vital services. The Rindge School of Technical Arts works with REAL and has developed some of its own school-incubated enterprises (see Rindge case study). REAL advocates the school-incubated enterprise

approach as an effective means for learning higher-order thinking skills, preparing students to succeed in an increasingly entrepreneurial economy, improving rural/urban communities and economies, and preparing students for general success—whatever field of work they may enter. The model of school-based enterprises has been advocated in the School-to-Work Act as a means of providing students with a school-to-work transition program.

Like Foxfire, REAL programs are not based on whole school reform; rather, they are single classes within a larger school program. It is that class's connection to the outside world that defines its REAL identity. By working in real-life situations, students learn to better understand the world of work. While providing students with a sense of entrepreneurship and career opportunities, REAL programs help develop academic and professional skills within a "real world" context. Like service learning and Foxfire, the use of experiential learning to better educate youth is a central tenet. In REAL programs, entrepreneurship is used as a vehicle not only to help students learn how to run a business, but also to provide them with the opportunities to learn to use their minds well in making important decisions.

Similar to Foxfire and service-learning programs where schoolwork is characterized by student action, collaboration, and connections to the real world, students in REAL programs research, plan, set up, and operate their own enterprises in cooperation with their school. In this regard, REAL programs are similar to AAI programs in which students are exposed to the various sectors of an industry and learn about a variety of issues and tasks. Students participate in a classroom component—an entrepreneurship course—and an experiential component in which they run their own venture. The business/service that each student chooses to develop is based on their research of the community. Students explore the types of businesses or services their community does not have but would benefit from if made available. While all of the REAL sites are linked by a set of common goals (like CES, service learning, and Foxfire), each program has to tailor its class to meet the needs and utilize the unique resources of its community. The enterprise is student-defined, student-planned, and student-run. It is a program centered around experience-based, student-centered education directed toward developing creative thinking, communication, and business-related skills. While certain technical skills are learned in the process of setting up and running a business, the focus is on academic and entrepreneurial skills.

REAL Enterprise programs aim to develop the following skills:

- effective *thinking*—problem-solving, paradigm busting, logical thinking, abstract thinking, decisionmaking, independent thinking, applied math, and brainstorming
- getting *along with others*—cooperation, using resources (things and people), networking, social interaction, patience, tolerance, forbearance, empathy, leadership, adaptability (dealing with change), working together, negotiation, and conflict resolution
- communication—public speaking, effective writing, listening, using the telephone, and effective reading
- understanding *the world*—research and interpretation, trend analysis, economics (understanding the big picture), understanding politics, and community awareness
- operating *effectively within organizations*—effective management, effective organization, planning, and delegation
- personal *empowerment and effectiveness*—self-confidence, projecting a positive image, myth-building, time management, using good grammar and manners, self-assessment, career planning, work ethic, positive thinking, mechanical skills, goal setting, following instructions, job readiness, punctuality, dressing for success, having theories such as "learn that the world does not owe you anything," and persistence
- technology—using a computer and a fax machine
- business *effectiveness*—marketing, ethics, financial statement analysis, and legal knowledge

Examples of enterprises developed in different rural communities are a Christmas tree business, a feeder pig farm, a graphics firm, a child care center, a shoe repair shop, and a recycling business. Once students have surveyed the community and decided upon a business interest, they assess its feasibility. If they find it a tangible goal, they draft a formal and comprehensive business plan to distribute to the appropriate people in order to gather financial and other types of support. In the final stages, students implement the

business/program and run it on their own. After high school, students have the option of graduating with the enterprise, passing it on to another class of REAL participants, or closing it down.

Schools apply to REAL's state office and, if accepted, a lead teacher, or a team, attends a training program before implementing the program into the school. Students apply in the tenth or eleventh grade, provide their reasons for applying, and are selected based on their applications and interviews. Students are not expected to be academically gifted in any way, nor are they all at risk. They are required to have at least an eighth-grade level of literacy and must illustrate why they are motivated to participate in the program and must exhibit an understanding of the challenges and hard work with which they will be faced. They are asked to show evidence as to where they have taken initiative (leadership) in organizing and carrying out an activity, completed a significant independent project above and beyond that ordinarily expected, and demonstrated unusual plans and actions.

REAL provides its teachers with curriculum packets, or frameworks, that can be adapted to individual classrooms. The packets include a series of ideas for student-initiated projects in a variety of communities. In addition, REAL has established a teacher network, similar to that of Foxfire's, which provides teachers the opportunities to communicate and collaborate. Because REAL programs are found in single classrooms among schools, the network becomes an important vehicle for REAL teachers at one site to exchange ideas and information with other REAL teachers. Opportunities for teacher collaboration are also provided through regional, state, and national workshops on the principles and pedagogies of REAL. The workshops also help train new teachers in the REAL process.

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City/Community-As-School

Like REAL, Foxfire, and service learning, the primary objective of City/ Community-as-School (CAS) is to provide opportunities for students to learn through and within their communities. CAS began in 1972 as an accredited public alternative school in New York City with a focus on external learning—or learning outside of the school building. In 1985, the school received a National Diffusion Network award and began setting up similar programs in other communities and cities, establishing itself as the CAS program.

Originally, CAS began as an alternative program for gifted students. The program has moved its focus to meet the needs of a variety of students, including those not engaged in or disenfranchised with school. The focus of the specific CAS program is dependent upon the school population; like the Coalition and REAL, each individual school defines its own program. Some schools place their priority on student learning within internships throughout the community, allowing students to fill a majority of their credits in field-based learning settings, while other sites limit the number of internships students can take. Furthermore, the various sites structure the internships somewhat differently—some attach a specific in-house class to the internship, while others have students working independently on related assignments. However, all of the experiences emphasize structure and reflection to achieve cognitive as well as affective development. The underpinning philosophy of all CAS programs is to establish means for student learning, other than the traditional lecture class method, and to tap into community resources as much as possible. The program holds as its central premise the idea that every child is a student of the community—every child must learn from the community, and the community has a responsibility to take part in educating every child.

As with Foxfire, REAL, service-learning programs, and work-based learning programs, CAS places education within a real-world context because it is one of the best motivators for engaging students in their schooling. Their efforts to place students in service- and work-based learning situations predates the current state and federal initiatives. The main elements of the program involve the following:

- placement of students in the real world to serve as interns
- compensation for their labor and learning in the form of high school credit towards a diploma (no monetary compensation is awarded)

- supervision of each placement by a teacher who creates a curriculum for the site (called a LEAP, for Learning Activity Experience Package) and monitors student progress
- once-a-week meeting in school for each student with an advisor

Along with numerous benefits to the staff and community, the CAS program benefits students by

- increasing student self-esteem and motivation.
- establishing better relationship between students, parents, and school staff.
- enhancing student understanding of the active roles they can play in shaping their education and future.
- increasing students' sense of belonging to the larger community and consequently school attendance and graduation rates.
- developing better organization and work habits through internships.
- helping students to earn credits through work experiences.
- increasing enrollment in college and other kinds of training after high school.
- widening of students' career and schooling horizons.
- turning on disenfranchised students to the importance of academics and other classroom-type training so that they can fulfill larger and more creative roles within their fields of interest.
- providing potential job placement after school or postgraduation.
- mentoring of individual students by adults who are in a unique position to help them.
- increasing participation by the community in the education process.
- creating new and exciting roles for teachers through staff development.

CAS prides itself on helping to expand both career and academic skills, and fostering the goals of career education without limiting the opportunities of students. Given its well-developed field-based learning component, the school-to-work movement can learn much from the experiences of the CAS program and, more specifically, from the original CAS model in Manhattan which spent years developing an effective field-based learning program.

For more information on CAS, please contact

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